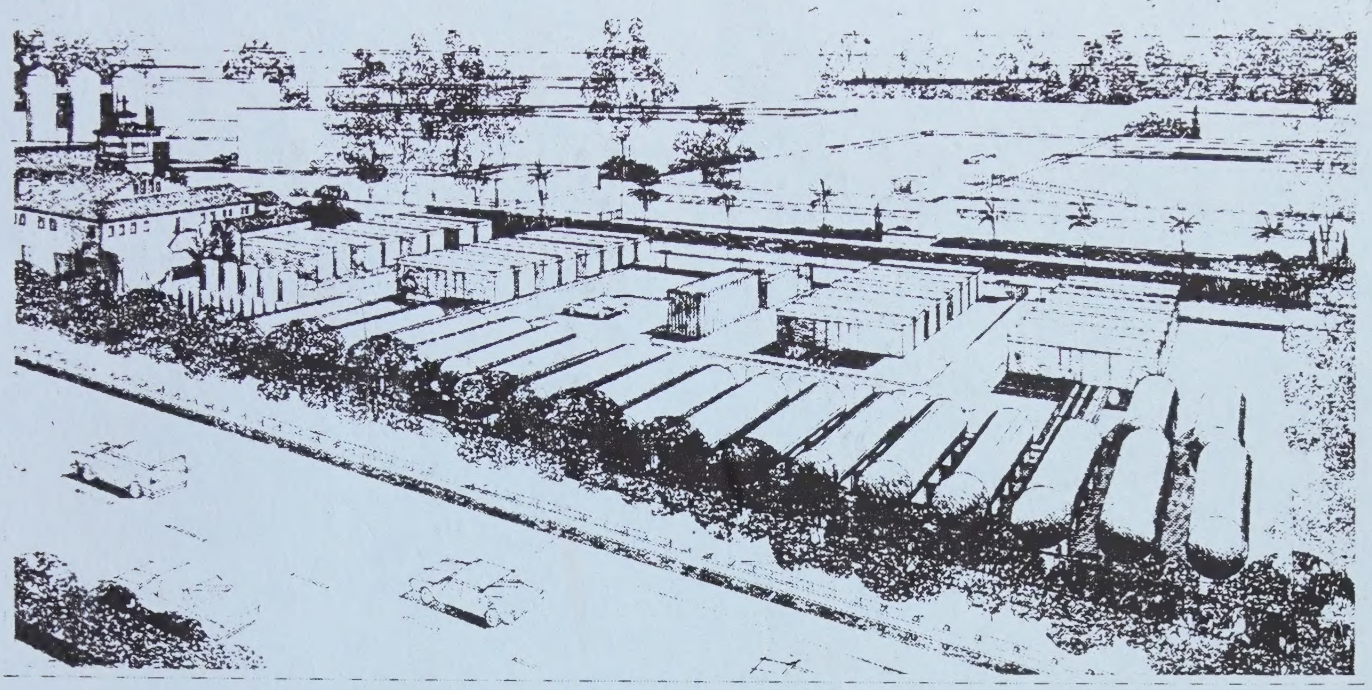


Final Environmental Impact Report for City of Santa Barbara's and Ionics, Incorporated's Temporary Emergency Desalination Project

SB-106-90

State Clearinghouse No. 9010859

Prepared for

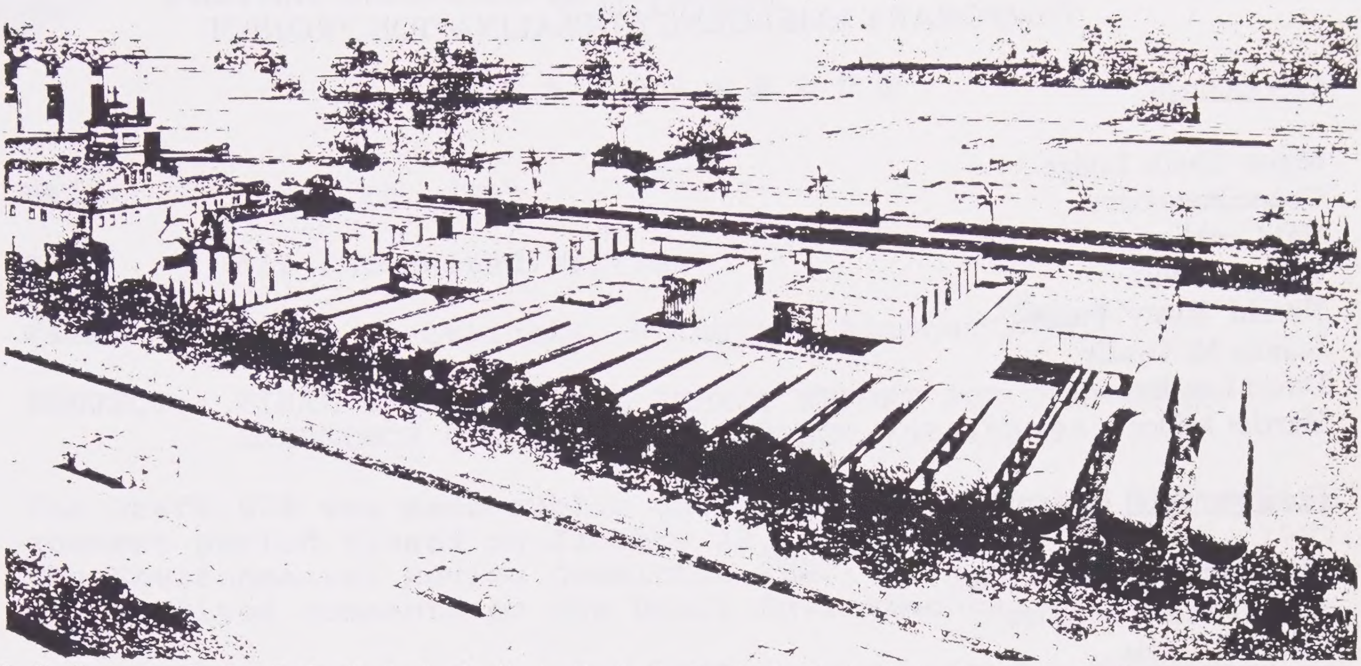
City of Santa Barbara Community Development Department and Ionics, Incorporated

March 1991

Woodward-Clyde Consultants

5951 Encina Road, Suite 200
Santa Barbara, California 93117

906B140A



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FINAL ENVIRONMENTAL IMPACT REPORT
CITY OF SANTA BARBARA AND IONICS, INCORPORATED'S TEMPORARY EMERGENCY DESALINATION PROJECT

<u>City Council</u>

Mayor Sheila Lodge
Councilmembers:
Hal Conklin
Gerry DeWitt
Harold "Rusty" Fairly
Jeanne M. Graffy
David Landecker
Harriet Miller

<u>Environmental Review Committee</u>

Elizabeth Woodward, Chair
Betsy Thies, Vice Chair
Eilene S. Cross
Tom Gerig
Gregory Mohr

<u>City Staff</u>

Richard D. Thomas, City Administrator
Sandra E. Lizarraga, Deputy City Administrator
Daniel Wallace, City Attorney
David D. Davis, Community Development Director
Donald D. Olson, City Planner
David Johnson, Public Works Director
Bruce Burnworth, Assistant Public Works Director/City Engineer

<u>Ionics, Incorporated</u>

Arthur L. Goldstein, Chairman
William E. Katz, Executive Vice President
Curtis A. Gollrad, Project Manager

<u>City EIR Project Staff</u>

Mitchell H. Oshinsky, Principal Planner
Dale T. Brown, Regional Issues Analyst
Kathleen Weinheimer, Assistant City Attorney
Janice M. Hubbell, AICP, Project Planner
Lezley Buford, Environmental Analyst

<u>Woodward-Clyde Consultants</u>

Robert L. Ray, Project Manager (EIR)

City of Santa Barbara

California

M E M O R A N D U M

DATE: March 20, 1991

TO: All Interested Parties

FROM: Mitch H. Oshinsky, Principal Planner MHO

SUBJECT: FINAL ENVIRONMENTAL IMPACT REPORT FOR TEMPORARY EMERGENCY DESALINATION PROJECT (SB-106-90)

The Draft EIR was made public on December 21, 1990. The public comment period closed on January 22, 1991. On January 15, 1991, the Environmental Review Committee (ERC) held a public hearing and received comments on the Draft Environmental Document.

Twenty comment letters on the DEIR were received. In answer to these comments, Woodward-Clyde Consultants prepared responses to the comments and made changes to the document. All comments and responses are contained in Appendix E of the Final EIR. Page E-1 provides an explanation of the organization of that appendix.

Changes to the document are shown in **bold**. In addition, numbered codes in the right-hand margins of the main document are intended to guide the reader to discussions in the responses to comments.

The reader may also wish to direct their attention to: Tables 2-7 and 2-9, which have been clarified regarding chemical use and finished water quality; standard applicant committed measures for construction phase air quality maintenance; clarification of water conservation in Section 7.2.4.2.; compilation of alternatives analysis information into matrix format in Tables 7-2.1 and 7-2.2; addition of a Glossary Section 12.0; clarification of modifications to the water distribution system in Appendix A; and reference to the Geotechnical Study in Appendix F (available under separate cover).

On March 15, 1991, the ERC, in accordance with CEQA Guidelines Section 15090, certified this environmental document, finding that the FEIR has been completed in compliance with CEQA, and that it is complete and accurate and a good faith effort toward full disclosure.

Should you have any questions on this FEIR, please address them to me at 805/564-5470.

MHO\FEIR.MEM

City of Santa Barbara

California

M E M O R A N D U M

DATE: March 20, 1991

TO: All Interested Parties

FROM: Mitch H. Oshinsky, Principal Planner MHO

SUBJECT: Final Errata for Temporary Emergency FEIR

Based on ERC and Staff review of the FEIR prepared by Woodward-Clyde Consultants, we offer the following errata, which by way of this memo are hereby incorporated as an errata sheet into the FEIR:

Page S-11, Table S-1, Visual Aesthetics, Applicant Proposed Mitigation Measures, last sentence, amend as: "Desalination plant facilities will be painted to match and blend in with the landscape screen and adjacent waste water treatment plant."

Page 2-32, third full bullet, following "material" insert "to or."

Page 2-32, add new bullet: "In consultation with the APCD, the City will monitor construction activities and mitigation measures to ensure that NOx emission reductions satisfy APCD requirements."

Page 7-15, last paragraph should be in **bold**.

Page 7-20, discussion subtitled "Conservation" which continues onto page 7-24, should be in **bold**.

Page 7-27, last sentence, delete "clearly" replace with "determined to be."

Page 9-2, Section 9.2.1, insert "Prevention" between "Management" and "Plan" and amend "RMP" to "RMPP." Add new last sentence "The RMPP will be submitted, and necessary mitigations will be commenced, prior to plant start-up."

This memo shall be incorporated into each copy of the FEIR. Following certification, people in possession of copies of the Administrative FEIR may bring them into the Planning Division office at 630 Garden Street for insertion of this memo, and cover sheets with reference to "Administrative" FEIR deleted.

MHO\FEIRERRA.MEM

This Environmental Impact Report (EIR) addresses environmental impacts associated with the City of Santa Barbara's and Ionics, Incorporated's proposed reverse osmosis desalination project in Santa Barbara, California.

This EIR includes an assessment of impacts and mitigation measures, and the following report sections:

- Introduction (Section 1.0)
- Project Description (Section 2.0)
- Environmental Setting, Impacts, and Mitigation (Section 3.0)
- Cumulative Impacts (Section 4.0)
- Growth Inducement (Section 5.0)
- Economic Analysis (Section 6.0)
- Alternative Assessment (Section 7.0)
- Unavoidable Significant Adverse Effects (Section 8.0)
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- Glossary (Section 12.0)

- Appendix A - **Initial Study and Negative Declaration for Modifications to the City of Santa Barbara's Water Distribution System**

- Appendix B - Phase I Cultural Resources Evaluation

- Appendix C - Initial Study, NOP Mailing Lists, and Traffic Supplement

- Appendix D - City of Santa Barbara, Council Agenda Report

- **Appendix E - Comments and Responses**

- **Appendix F - Geotechnical Study (under separate cover)**

The City of Santa Barbara is experiencing an extreme drought-induced water shortage. In response, the City is considering the development of a temporary emergency project to supply up to 10,000 AFY of potable water for up to five years to replace normal supplies which are unavailable due to the drought, a portion of which may be made available for sale to other neighboring water purveyors. The City of Santa Barbara and its citizens are already facing serious adverse environmental and economic impacts due to the current water shortage. The Stage III Drought Regulations imposed in February 1990, include prohibitions on most turf watering, all overhead sprinkling of landscaping, and use of water for cleaning pavements or building exteriors. Thus, businesses, public institutions, and residences have suffered loss of landscaping. Businesses dependent on high water usage have also experienced increasing costs as Stage III Drought Regulations include the imposition of a steeply increasing block rate structure for water rates which results in severe economic penalties for water use beyond minimal requirements. The significance of these impacts is expected to increase if the duration and severity of the drought continue. The City and County of Santa Barbara have both declared a local emergency under the Emergency Services Act. In addition, the Governor of California has issued proclamations declaring a State of Emergency in both the City (refer to Exhibit S-1) and County of Santa Barbara.

The City undertook an extensive review process to identify and select a temporary alternative water supply, including consideration of more than 30 alternative proposals by the City Alternative Water

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

Exhibit S-1

**PROCLAMATION
OF A
STATE OF EMERGENCY**

I, **GEORGE DEUKMEJIAN**, Governor of the State of California, have found that conditions of extreme water shortage exist within the City of Santa Barbara, State of California, caused by the cumulative effects of four years of below average rainfall and recent wildfires in the County of Santa Barbara. The Mayor and City Council of the City of Santa Barbara have requested that I proclaim a State of Emergency because the water shortage and conditions resulting from this drought are beyond the control, services, personnel, equipment and facilities of the City of Santa Barbara. Under the authority of Article 13, Title 2, Division 1 of Chapter 7, Government Code, I therefore declare a State of Emergency in the City of Santa Barbara; and

Pursuant to the proclamation, I hereby direct all agencies of the state government to utilize and employ state personnel, equipment and facilities for the performance of any and all activities necessary to alleviate this emergency; and

I **DIRECT** that as soon as possible, this proclamation be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this proclamation.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 17th day of July 1990.

George Deukmejian

Governor of California

ATTEST:

Secretary of State

Supply Panel. The City Council selected the Ionics project as the preferred alternative on August 14, 1990. Pending completion of the environmental review process and receipt of necessary regulatory approvals, the desalination facility will replace a portion of the City's normal local water supplies which are currently not available (or are anticipated to be unavailable by early 1992 if the drought continues).

The proposed desalination project consists of the following major components:

- Reverse osmosis desalination plant (up to 10,000 AFY capacity) to be constructed on vacant City-owned land (about 1.5 acres) adjacent to the existing El Estero Wastewater Treatment Plant (WWTP) at 525 E. Yanonali Street;

- Onshore seawater pumping station (up to 1000 horsepower) and chemical treatment unit to be constructed near the southeast corner of the El Estero WWTP on City-owned land;

- Seawater intake structure to be installed approximately 2500 feet offshore along the abandoned 42-inch ocean outfall line which will be sleeved with a plastic pipeline insert and electric cable for offshore pump;

- Onshore/offshore seawater supply pipeline (36-inch diameter) between onshore pump station and offshore seawater intake (sleeved within abandoned outfall line over entire length);

- Pipelines to transport seawater and chemicals between desalination plant site and onshore pump station/chemical treatment area;

- Pipelines between pump station/chemical treatment area and El Estero WWTP for chemical supplies (chlorine and sulfur dioxide in water solution or alternate forms of disinfection);

- Pipeline to transport concentrated seawater brine from desalination plant site to interconnection point with existing ocean outfall for El Estero WWTP;

- Concentrated seawater brine discharge (up to 13.35 million gallons per day including backwash) via the existing El Estero WWTP secondary effluent ocean outfall;

- Interconnection to Southern California Edison (SCE) electrical supply for desalination facility operation (up to 8 megawatts required) and onshore/offshore pumping facilities (will involve construction of 66kV substation at El Estero WWTP and interconnect to nearby SCE substation);

- Sanitary waste tie-in between desalination facility and adjacent El Estero WWTP; and

- Interconnection of treated freshwater to City's distribution system (water main adjacent to desalination plant site on Yanonali Street) and upgrades to City distribution system between Reservoir No. 1 and Sheffield Reservoir (for output above 8000 AFY).

The proposed project has been designed to reduce impacts to the environment to the extent possible. The major components of the proposed desalination plant are skid or trailer mounted to facilitate deployment, throughput flexibility, and decommissioning, while limiting construction-related impacts. The proposed desalination facility use of the site is consistent with the zoning of ocean-oriented and light manufacturing and special district coastal (OM-1-S-D-3). The proposed use of the retrofitted abandoned outfall for seawater intake and use of the existing ocean outfall for brine discharge will limit offshore construction and operation related effects to the extent practicable. The design of the intake structure would limit effects on marine organisms due to the very low velocity through the proposed seawater intake structure (less than 0.1 feet per second).

Implementation and normal operation of the proposed project would not result in any long-term, unmitigable significant adverse impacts. The desalination facility would require a substantial amount of energy to operate (approximately 8 MW) in relation to the other existing water supplies in the City. However, adequate electrical supplies are available through Southern California Edison. The addition of the concentrated seawater brine to the existing El Estero WWTP secondary effluent would change the characteristics of the existing offshore discharge and affect water quality and marine organisms, although these effects are not anticipated to be significant. The desalination and pumping station facilities would generate noise, but would not be expected to exceed applicable

standards, as mitigated. Construction of the 10,000 AFY facility would require removal of the Salsipuedes offramp from Highway 101; this offramp was constructed as a temporary offramp and will be replaced in function by CalTrans' new Garden Street offramp (under construction). Installation of the offshore seawater intake, including sleeving the abandoned outfall from a work area to be excavated around an existing access manhole on the beach, would affect recreational use of a small portion of the beach for up to 2 months.

Construction of the proposed desalination project will result in temporary air emissions from onshore and offshore construction equipment, including potentially significant emissions of nitrogen oxides (NO_x). Applicant-committed mitigation measures for air quality (refer to Section 2.5.3), including NO_x emissions, are expected to limit short-term air emissions during construction to insignificant levels.

Various chemicals would be stored and used at the onshore pump station/chemical treatment area and at the desalination plant. If an accidental release of hazardous materials occurred, the potential for adverse effects to the environment and human health exists. All chemical handling and storage facilities will be designed and operated in accordance with applicable regulations and potential hazards will be mitigated by use of double containment devices, thereby limiting the probability of an accident. Chlorine ~~and sulfur dioxide~~ would not be stored at the desalination plant or onshore pump station/chemical treatment area, thus an accidental release of concentrated chlorine ~~or sulfur dioxide~~ could not occur at either of these locations.

Beneficial impacts associated with the project, if implemented, include securing a reliable water supply for the City and, possibly, the region during the drought. The project would reduce the need to overdraft the groundwater basins in the area. The addition of the brine discharge to the El Estero WWTP effluent will dilute the concentrations of various constituents in the WWTP effluent. The addition of the brine discharge will raise the salinity of the effluent causing it to more closely approximate the salinity of the ocean receiving waters.

Refer to the main body of this EIR for more information. Table S-1 contains a summary of potential impacts and applicant proposed and recommended mitigation measures.

Table S-1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Issue Area and Impact Significance	Mitigation Measures		Residual Impact
	Applicant Proposed	Additional Measures	
GEOLOGY AND SOILS			
No significant adverse effects identified for construction or operation phases of the proposed desalination project.	Design and construct all onshore and offshore facilities in accordance with applicable building codes (Seismic Zone IV), including consideration of seismic, liquefaction/settlement, tsunami, and other geologic hazards, as identified in geologic/geotechnical report.	None	None
WATER RESOURCES			
Onshore Hydrology and Water Quality			
No significant adverse impacts identified for construction or normal operation of desalination facilities; accidental releases of chemicals from the proposed chemical lines adjacent to Laguna Channel could significantly impact water quality in the Channel; accidental and/or undetected leakage could adversely impact groundwater resources.	Design, construct, and operate project facilities involving hazardous chemicals in accordance with applicable regulations including Article 80 of the Uniform Fire Code; chemical feed lines would be double contained to reduce accidental release potential.	Conduct a hazard evaluation and prepare a Risk Management Plan for the proposed project in conjunction with the El Estero WWTP; implement leak monitoring, automatic shut off valves, and other safety procedures as warranted.	Insignificant

Table S-1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES (continued)

Issue Area and Impact Significance	Mitigation Measures: Applicant Proposed	Mitigation Measures: Additional Measures	Residual Impact
WATER RESOURCES			
Oceanography and Marine Water Quality			
No significant adverse impacts were identified for construction or normal operation.	The Regional Water Quality Control Board (RWQCB) regulates the offshore discharge from the El Estero WWTP via Order No. 88-148 which includes a comprehensive monitoring and reporting program; the City and Ionics plan to continue this program which will need to be modified to monitor the combined El Estero/desalination brine discharge.	**Conduct a baseline study to establish offshore conditions prior to desalination plant start-up; and perform quarterly marine water quality/ biological monitoring in accordance with RWQCB requirements during operational phase.**	**Insignificant**
BIOLOGICAL RESOURCES			
Terrestrial Biology			
No significant adverse impacts were identified for construction or normal operation -- refer above to Onshore Hydrology and Water Quality regarding potential impacts of accidental chemical spill in Laguna Channel.	Onshore project facilities have been located so as to avoid direct disturbance of sensitive habitats.	None	None

Table S-1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES (continued)

Issue Area and Impact Significance	Mitigation Measures		Residual Impact
	Applicant Proposed	Additional Measures	
BIOLOGICAL RESOURCES			
Marine Biology			
No significant adverse effects are expected from construction or normal operation of the intake or outfall.	Refer above to applicant proposed measures for Oceanography and Marine Water Quality; the RWQCB monitoring and reporting program includes marine biology considerations including benthic organism studies.	**Refer above to additional measures for Oceanography and Marine Water Quality.**	**Insignificant**
NOISE			
Potentially significant adverse noise impacts have been identified at the Rescue Mission from the desalination facility; no significant effects are expected from the proposed onshore pump station or offshore submerged pump.	Design of facilities includes sound proofing in the desalination facility trailers where the high pressure pumps will be housed -- this mitigation is expected to reduce unmitigated levels (at 3 feet from the source) by about 10 dB.	Additional measures are recommended to further reduce noise levels at the eastern edge of desalination plant site from predicted 72 dB to at least 70 Ldn; preliminary analysis indicates that 70 Ldn can be achieved by: switch exhaust fans to opposite ends (i.e., west vs. east) of RO trailers; and shield product pumps, air blowers, and vacuum pumps so that noise levels of less than 80 dB (at 3 feet) are achieved. Noise monitoring is recommended following plant start-up to assure that noise levels inside the Rescue Mission do not exceed 45 dB; if so, additional mitigation shall be implemented.	Insignificant

Table S-1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES (continued)

Issue Area and Impact Significance	Mitigation Measures: Applicant Proposed	Mitigation Measures: Additional Measures	Residual Impact
RISK OF UPSET			
No significant adverse effects identified for construction or normal operation of desalination facility, including chemical facilities; accidental releases of chemicals during the operational phase could result in potentially significant effects.	Design, construct, and operate project facilities in accordance with applicable regulations including Article 80 of the Uniform Fire Code; chemical feed lines will be double contained to reduce accidental release potential; chlorine ~~and sulfur dioxide~~ will only be handled in dilute (0.3%) aqueous solutions to reduce hazard. Chemical storage areas will be constructed with specially treated concrete containment structures.	Conduct a hazard evaluation and prepare a Risk Management Plan (in accordance with California Health and Safety Code, Chapter 6.95) for the proposed project in conjunction with the El Estero WWTP; implement leak monitoring, automatic shut off valves, personnel training, and other safety precautions, as warranted.	Insignificant
HUMAN HEALTH			
No significant adverse effects identified for construction or normal operation.	Design and safety measures related to preventing chemical release, as above for Risk of Upset; finished water quality will meet all established Primary and Secondary drinking water standards as well as other City requirements.	None	Insignificant

Table S-1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES (continued)

Issue Area and Impact Significance	Mitigation Measures		Residual Impact
	Applicant Proposed	Additional Measures	
VISUAL AESTHETICS			
No significant adverse visual impacts were identified for the proposed desalination project.	The desalination facility has been designed to limit the height of facilities as practicable, and it will be surrounded by an aesthetic wall and/or mature/fast growing landscaping on all sides except the west where an existing wall at the City Corporation Yard already exists. Desalination plant facilities will be painted to match and blend in with the adjacent Rescue Mission.	None	None
RECREATION			
No significant adverse impacts are identified for recreation from construction or operation of desalination project; temporary adverse impacts to recreation are expected but the recommended mitigation measures would be expected to help reduce impacts.	Construction activities on the beach are scheduled for the fall and/or winter months which are the off season for tourism/recreational use of the beach.	The parking lot at the west end of Chase Palm Park shall be utilized for beach access thereby limiting truck traffic and disturbances in Chase Palm Park to the extent possible during intake line construction activities; a flagman shall be stationed at the crossing of the bike path for safety purposes and the excavation in the vicinity of the weir box shall be fenced as well. **The subsurface intake structure shall be marked with a standard lighted navigational buoy to alert boaters to the underwater obstruction.**	Insignificant

Table S-1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES (continued)

Issue Area and Impact Significance	Mitigation Measures: Applicant Proposed	Mitigation Measures: Additional Measures	Residual Impact
CULTURAL RESOURCES			
Potentially significant adverse impacts to cultural resources identified for construction of onshore project facilities.	Use existing pipelines and locate facilities in areas of previous disturbance.	Due to concern regarding potential impacts to cultural resources, including the historic El Estero Racetrack, an archeological monitor shall be retained to monitor all excavations greater than 2 feet in depth at the desalination plant site and in the vicinity of the tie-in point for the brine discharge line into the City's existing outfall (near southwest corner of El Estero WWTP). If cultural resources are encountered (onshore or possibly offshore), work shall be halted and a professional archeologist and the Environmental Analyst shall be consulted to allow for proper data recovery.	Insignificant
ENERGY USE			
No significant adverse impacts to energy use and/ or supplies are identified.	Energy recovery turbines and efficient power tie-in to SCE system via new 66 kV substation for the plant.	None	None

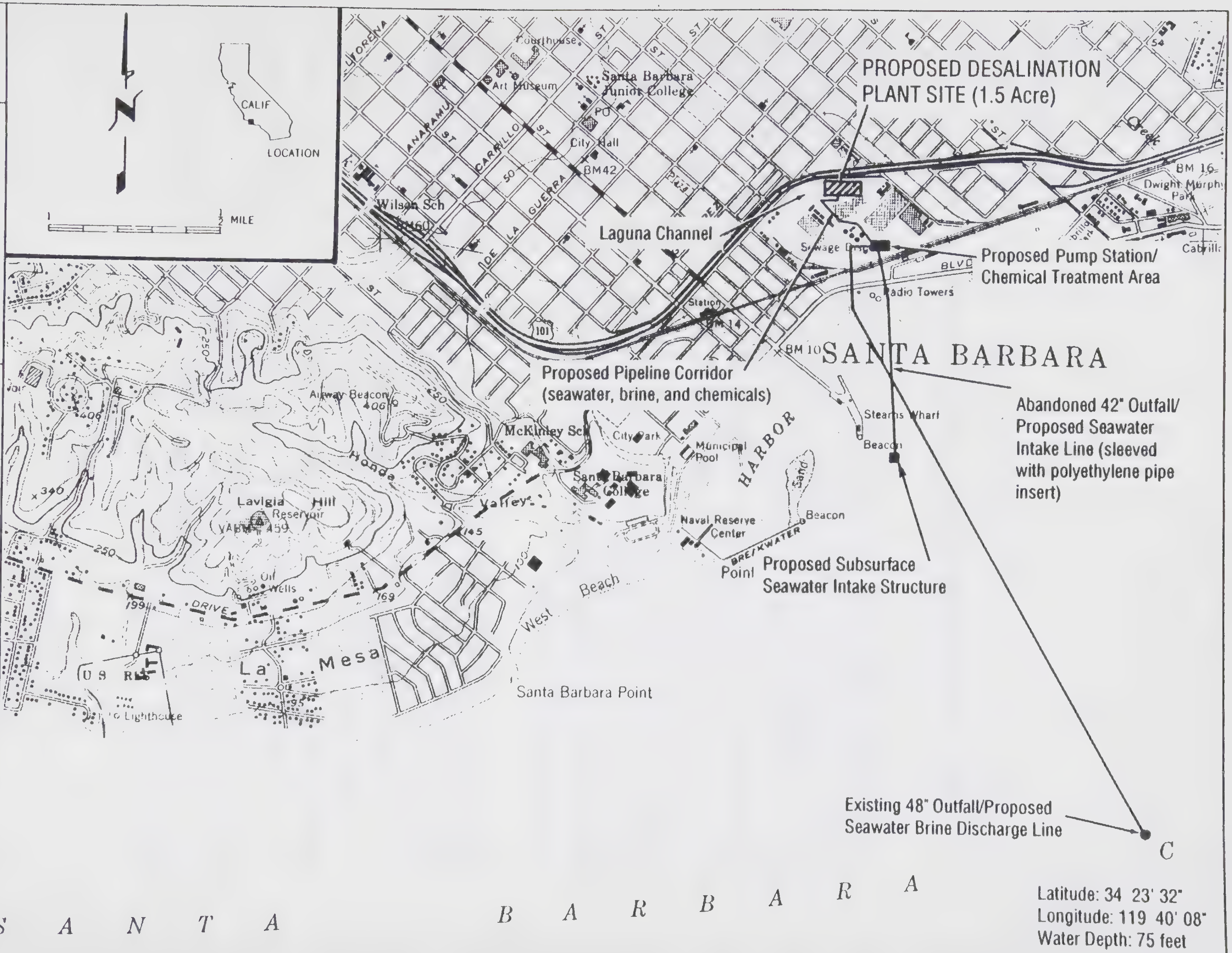
Table S-1. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES (concluded)

Issue Area and Impact Significance	Mitigation Measures: Applicant Proposed	Mitigation Measures: Additional Measures	Residual Impact
CONSTRUCTION PHASE			
Potentially significant short term air emissions of NO_x have been identified for the construction phase of the project.	**Water for controlling fugitive dust; proper maintenance and tuning of all equipment; combustion control techniques for NO_x; substitution of gasoline powered equipment for diesel, as practical; installation of catalytic converters on gasoline powered equipment; scheduling of truck traffic for non-peak hours; and encouragement of worker car-pooling. Refer to Section 2.5.3 of EIR.**	**None**	**Insignificant**

1.1 PURPOSE OF THIS ENVIRONMENTAL IMPACT REPORT

This environmental impact report (EIR) assesses the environmental consequences which would potentially result from implementation of the City of Santa Barbara's and Ionics, Inc.'s proposed temporary emergency reverse osmosis desalination project in Santa Barbara, California (refer to Figure 1-1). The EIR includes an assessment of potential effects, as well as recommended mitigation measures for reducing the significance of predicted impacts. The EIR also includes an evaluation of a range of alternatives which could potentially reduce environmental effects. The Alternatives Section includes an assessment of the ability of the alternatives to attain the basic objectives of the project which are to provide temporary emergency supplies of up to 10,000 acre feet per year (AFY) of water to be on-line by early 1992 and available for up to 5 years. A portion of the potable water produced by the proposed 10,000 AFY project may be made available for sale to other neighboring water purveyors.

Following closure of the public review period for review and comment of this Draft EIR by the public and Federal, State, and local Responsible Agencies, a Final EIR will be prepared and issued. Following certification of the Final EIR by the City Environmental Review Committee, the project will be scheduled for review of a Coastal Development Permit by the City Planning Commission. The Planning Commission will consider the information in the EIR, staff reports, and public testimony in order to evaluate the project for consistency with the Santa Barbara Local Coastal Plan (LCP). The EIR will also be utilized by Federal and State agencies during the permitting and approval process for the project (refer to Section 2.2 of this EIR for more information). Approvals for the proposed project are being requested on the basis of a five year project life -- additional approvals, including additional environmental review, would be required to continue operation beyond five years.



Project No.
906B140A

Santa Barbara Emergency
Water Supply Project

Woodward-Clyde Consultants

Figure 1-1. GENERAL LOCATION OF
PROPOSED DESALINATION PROJECT
COMPONENTS

December
1990

1.2 BACKGROUND

The City of Santa Barbara recognized the severity of the current drought conditions when it declared a water emergency and implemented Stage III Drought Regulations in February, 1990. Following recognition of the problem, the City undertook an extensive review process to identify and select a preferred temporary alternative water supply. The City's review process included:

- Distribution of 200 requests for proposal and receipt and consideration of 46 proposals;

- Over 2000 person hours of evaluation by the City Alternative Water Supply Panel of more than 30 proposals; and over 20 hours of public hearings by the Panel;

- Preparation of a Preliminary Environmental Assessment to evaluate the final three tankering and three desalination proposals;

- An Early Public Consultation Scoping Hearing by the City Environmental Review Committee (ERC) (an optional provision of CEQA);

- Over eight hours of public hearings by the City Council, culminating in the selection of the Ionics desalination project as the preferred alternative, August 14, 1990; and

- ERC public hearing on August 24, 1990 to discuss the findings of the Initial Study, including the determination that a focused EIR would be prepared to assess the potential impacts of the project.

1.3 SCOPE OF THE EIR

The City issued a public Notice of Preparation (NOP), including an Initial Study, for this EIR on August 27, 1990. As required by Section 15126 of the California Environmental Quality Act (CEQA) Guidelines (Title 14, California Code of Regulations), the EIR focuses on potentially significant issues, including issues of apparent public and regulatory agency concern. Copies of the NOP/Initial Study and NOP mailing list are presented in Appendix C of this EIR.

The Initial Study, as approved by the ERC, identified the following topics for further study in this EIR:

- Geology and soils
- Water resources
- Biological resources (terrestrial and marine)
- Noise
- Risk of upset
- Human health
- Visual aesthetics
- Recreation
- Cultural resources
- Energy use
- Growth inducement
- Economic analysis

The EIR also includes a description of project related traffic based on information which became available following completion of the Initial Study.

This EIR considers the maximum facility capacity of 10,000 AFY. For any issue areas where a smaller facility would be expected to have different impacts, the smaller facility options are also discussed.

This EIR considers the following types of alternatives: other desalination facility sites; alternative desalination technologies; alternate short-term water supply options, including water conservation; and the No Project alternative.

2.1 PURPOSE AND NEED FOR THE PROJECT

The purpose of the proposed project is to provide a temporary emergency water supply to be on line by early 1992 to replace a portion of regional water supplies which have been or may be lost due to the drought. The drought which began in about 1986 is now in its fifth year and has caused a current shortage in City water supplies of 26 percent. Based on existing supplies, the water deficit could rise to 65 percent in the 1992-1993 water year if Lake Cachuma goes dry and a temporary emergency water supply is not available (refer to Table 7.2-3). Table 7.2-3 also includes additional emergency supplies identified as "probable new supplies" which the City currently has under development, including temporary deliveries of State water, additional groundwater pumping capacity, and bedrock wells.

The City relies heavily on Gibraltar and Cachuma reservoirs for approximately 75-85 percent of normal water production. Gibraltar Reservoir has been dry since November 1989 and Lake Cachuma is at less than 17 percent of its total storage capacity, the lowest level since 1957. If rainfall in the current and following winters (90-91 and 91-92) is average or less than average, usage from Lake Cachuma could empty the reservoir by May of 1992.

In addition, the City has been heavily overdrafting its groundwater basins in recent years during the drought to make up for reduced surface supplies. While this is a planned operational decision under the City's conjunctive management of its groundwater and surface water supplies, it cannot be continued indefinitely. Reliance on groundwater during drought periods creates an overdraft condition which ideally should be eliminated as soon as possible through a groundwater recharge program. At a minimum, it requires prudent future use of groundwater resources until the basins have been naturally replenished. Thus, supplies must be available to replace groundwater production whether or not the drought continues.

A summary of the City's historical and current water uses is presented in Table 2-1, along with data on current water supplies and projections of future water supplies available to the City if the drought continues. The proposed project is designed to alleviate the water shortage of over 8000 AFY projected in Table 2-1 for 1992-93 if the drought continues. The proposed desalination project could provide 5000 AFY for the City, reducing the shortage to approximately 3000 AFY or 18 percent of pre-drought demand, considering existing and probable new supplies. "Speculative" new supplies could further reduce this shortage, as shown in Table 7.2-3.

Because the drought is affecting water supplies available to all South Coast water purveyors, the proposed project has been sized to potentially accommodate regional emergency water supply needs. At the maximum proposed capacity of 10,000 AFY, a portion of the desalination plant output may be available for sale to other neighboring water purveyors because the drought is affecting water supplies to all South Coast water purveyors.

The proposed desalination project, to be constructed, owned, and operated by Ionics, Inc., has been selected by the City to provide a temporary emergency water supply to replace depleted surface and groundwater supplies. The life of the proposed project is five years. Contractual agreements between the City and Ionics provide for putting the facility on stand-by or terminating use of the facility at any time during the five years if the water supplies are not needed. At the end of the five year project life, the City may require removal of the project (refer to Section 2.8 on Abandonment), may acquire ownership of the facility, or may extend the contract with Ionics. The latter two options would require further environmental review and discretionary approvals by the City Council and responsible agencies. The proposed project is designed to be a short-term response to the emergency conditions resulting from the shortage of water only. Additional environmental review and permitting by local, State, and Federal agencies would be required in order to establish a long-term desalination plant.

Use of water produced by the proposed project will be limited to replacing water supplies lost due to the drought. This requirement will be met through the City's commitment to the following use limitations as part of the project description:

- The City will not purchase water for the City's use under its contract with Ionics when other water supplies available to the City meet pre-1988 demand on a safe

Table 2-1. OVERVIEW OF CITY WATER USAGE AND SUPPLIES (INCLUDES POTABLE & NON-POTABLE SUPPLIES)

City of Santa Barbara Pre-Drought Water Demand (Acre Feet per Year)[a]	Current Projected City Water Deliveries for WY 90/91 (Acre Feet per Year)[b]	Pre-drought Water Supply (Acre Feet per Year)[c]	Projected Available Water Supply Without Desalination Project if Drought Continues (Acre Feet per year)[d, e]						
			90/91	91/92	92/93	93/94	94/95	95/96	96/97
16,300	11,000	15,600-17,100	13,200	14,500	8,310	7,720	7,720	7,720	7,720

[a] Source: 1988 City of Santa Barbara General Plan Update Analysis.

[b] Source: City of Santa Barbara Water Supply and Revenue Plan (1990).

[c] Source: City of Santa Barbara Draft Long-Term Water Supply Alternatives Analysis, Chapter 4. Range of values reflects the difference between safe yield and draft yield of Cachuma. This includes Cachuma allotment at 7,570-9,100 AFY, Gibraltar supply at 5,426 AFY, Mission Tunnel at 1,072 AFY, groundwater production at 1,400 AFY, and transfer from Goleta Water District at 85 AFY.

[d] Source: City of Santa Barbara Water Supply and Revenue Plan including "Existing sources" and "probable new sources," and Public Works Department projections.

[e] Assumptions: Groundwater pumping is reduced to minimum level of 300 AFY in 92/93; continued drought through 96/97; rainfall continues to be below average; no major rainfall events, meaning no significant inflow to Cachuma.

yield basis, including 100,000 AF storage in Lake Cachuma and replenishment/recovery of the City's groundwater basins.

- Any of the individual water agencies participating in a regional project will be required to comply with the requirements of CEQA.

2.2 APPROVALS TO BE SOUGHT THROUGH USE OF THIS EIR

2.2.1 Introduction

The City of Santa Barbara and Ionics, Incorporated as joint applicants are seeking approval to construct and operate a reverse osmosis desalination facility in Santa Barbara, California. As Lead Agency for CEQA compliance, the City determined based on an Initial Study that an EIR was required to assess the potential environmental impacts of the project. A Notice of Preparation (NOP) including the Initial Study, was distributed via mail on August 27, 1990 to various Federal, State, and local regulatory agencies, and to local environmental organizations and members of the general public. The 30 day NOP comment period formally closed on October 5, 1990. Written comments were received from 12 State agencies, environmental organizations, and/or members of the general public. These comments have been considered, as appropriate, in the scope of this Draft EIR.

Following closure of the comment period on this Draft EIR, the substantive comments received will be considered and the Final EIR will be prepared. After the Final EIR is completed, the City Environmental Review Committee (ERC) must certify at a public ERC Certification Hearing that the EIR has been prepared in accordance with the requirements of CEQA. Following certification of the EIR by the ERC, the project will be scheduled for Coastal Development Permit review and approval by the City Planning Commission. The Planning Commission will consider the information in the EIR, staff reports, and public testimony in order to evaluate the project for consistency with the Santa Barbara Local Coastal Plan (LCP).

This EIR will also be utilized by Federal, State, and local agencies during the permitting and approval process for the project. Due to the emergency nature of the drought situation, the City has obtained tentative commitments from other regulatory agencies with permitting jurisdiction to expedite processing of permit applications for this project. The emergency declarations at the State

and local levels are expected to facilitate the processing of permit applications to the maximum extent possible. In addition, the city has waived certain review requirements and permits related to City sponsored emergency water projects in the City under Ordinance No. 4640 (adopted July 24, 1990). Waived requirements include those contained in Municipal Code Titles 22 and 28 that are normally applicable to construction projects, except those contained in Municipal Code Chapter 22.04 and Section 28.45.009. Approvals for the proposed project are being requested on the basis of a five year project with a capacity of up to 10,000 AFY. Additional approvals would be required to continue operation beyond five years.

2.2.2 Permits and Approvals

Table 2-2 summarizes currently identified permitting, approval, and/or authorization requirements for this project.

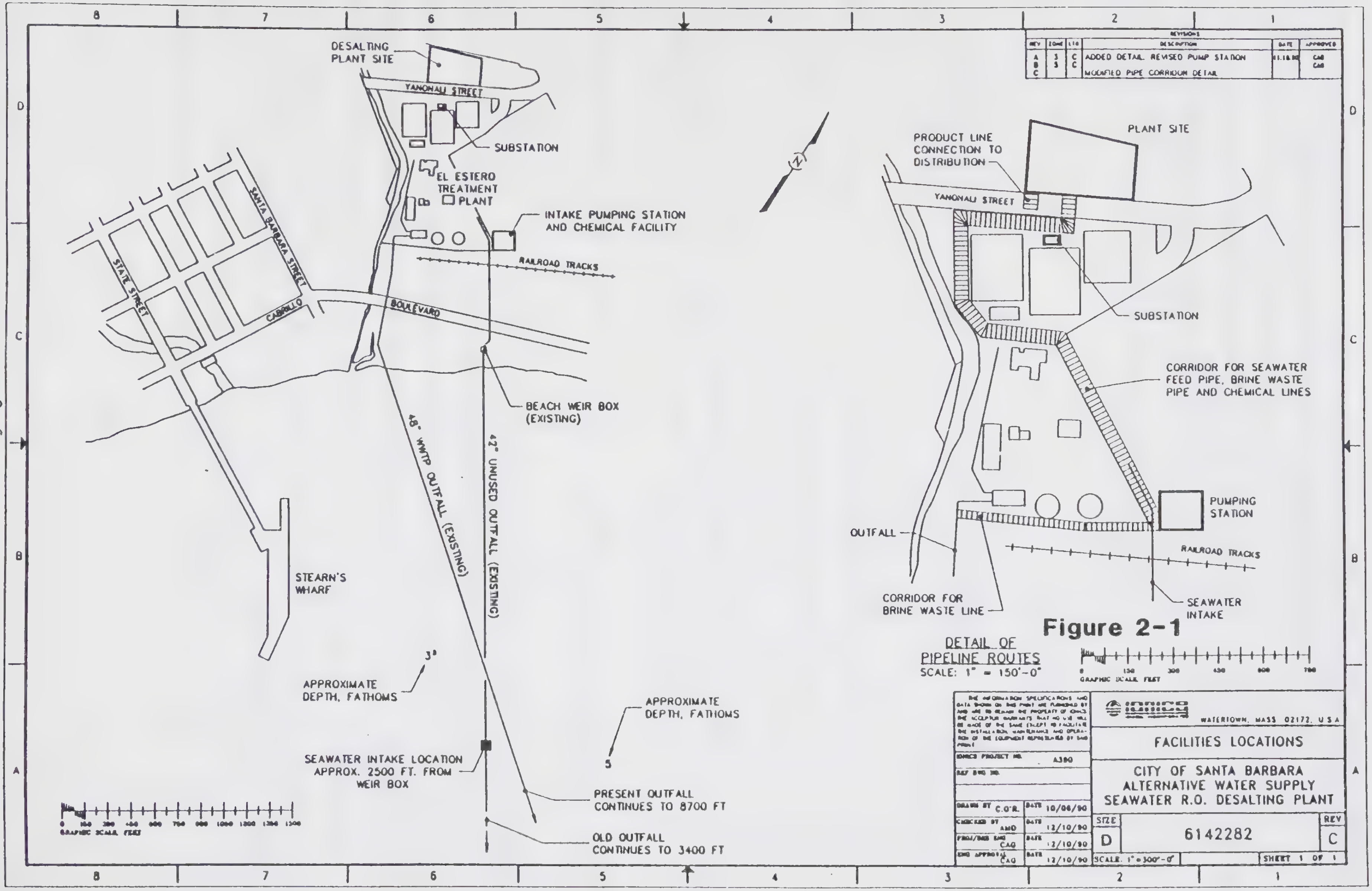
2.3 PROJECT LOCATION AND SETTING

2.3.1 Overview

The majority of the project is located in the coastal zone. Refer to Figures 1-1 and 2-1 which show the general location of the proposed project components. The locations of the individual project components are briefly described below.

2.3.2 Desalination Facility Site

The proposed desalination facility site is located adjacent to, and south of U.S. Highway 101 at 525 East Yanonali Street just west of Salsipuedes Street. This site is approximately 1.5 acres in size and lies between the highway and Yanonali Street. The site is nearly flat and located at an elevation of approximately 10 feet above mean sea level (MSL). Drainage is by sheetflow to the north into an existing storm drain system which drains to Laguna Channel to the west of the site. This parcel is devoid of vegetation and vacant except for solid waste disposal containers kept onsite for disposal of vegetative clippings by the City's Park Department. These containers will be relocated to the adjacent City Corporation Yard.



DESALTING PLANT SITE
YANONALI STREET
SUBSTATION
EL ESTERO TREATMENT PLANT
INTAKE PUMPING STATION AND CHEMICAL FACILITY
RAILROAD TRACKS
SANTA BARBARA STREET
STATE STREET
CABRILLO BOULEVARD
BEACH WEIR BOX (EXISTING)
48" WWTP OUTFALL (EXISTING)
42" UNUSED OUTFALL (EXISTING)
STEARN'S WHARF
APPROXIMATE DEPTH, FATHOMS
3
APPROXIMATE DEPTH, FATHOMS
5
SEAWATER INTAKE LOCATION APPROX. 2500 FT. FROM WEIR BOX
PRESENT OUTFALL CONTINUES TO 8700 FT
OLD OUTFALL CONTINUES TO 3400 FT
GRAPHIC SCALE, FEET
N
ADDED DETAIL, REVISED PUMP STATION
MODIFIED PIPE CORRIDOR DETAIL
PLANT SITE
PRODUCT LINE CONNECTION TO DISTRIBUTION
YANONALI STREET
SUBSTATION
CORRIDOR FOR SEAWATER FEED PIPE, BRINE WASTE PIPE AND CHEMICAL LINES
PUMPING STATION
OUTFALL
RAILROAD TRACKS
CORRIDOR FOR BRINE WASTE LINE
SEAWATER INTAKE
DETAIL OF PIPELINE ROUTES
SCALE: 1" = 150'-0"
GRAPHIC SCALE, FEET
WATERTOWN, MASS 02172, U.S.A.
FACILITIES LOCATIONS
CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER R.O. DESALTING PLANT
IONICS PROJECT NO. A380
DRAWN BY C.O.R. DATE 10/06/90
CHECKED BY AMO DATE 12/10/90
CAQ DATE 12/10/90
CAQ DATE 12/10/90
SIZE D
6142282
REV C
SCALE 1" = 300'-0"
SHEET 1 OF 1

Figure 2-1

Table 2-2. SUMMARY OF POTENTIALLY REQUIRED PERMITS, APPROVALS OR AUTHORIZATIONS

Responsible Agency	Permit, Approval, or Review	Potentially Applicable To
FEDERAL		
Army Corps of Engineers[a]	Letter Of Permission[b]	Activities in "navigable waters" of the U.S. and/or construction, operation, or abandonment of facilities on land under federal jurisdiction, or actions requiring major federal action (e.g., permit approvals)
STATE		
California Coastal Commission	Coastal Development Permit	Offshore components
	Consistency Determination[c]	Offshore components requiring federal approval
State Lands Commission	CEQA review and possibly Public Agency Lease[d]	Any offshore project component not on granted tidelands
California Occupational Safety and Health Administration (CalOSHA)	Trenching and Excavation Permit	Any portion of project greater than five feet deep
California Department of Transportation (CalTrans)	Transportation Permit	Transport of Oversized Loads on California State Highways (e.g., during construction phase)

Table 2-2. SUMMARY OF POTENTIALLY REQUIRED PERMITS, APPROVALS OR AUTHORIZATIONS (continued)

Responsible Agency	Permit, Approval, or Review	Potentially Applicable To
STATE (continued)		
State Water Resources Control Board (SWRCB) - Regional Water Quality Control Board - Central Coast Region (RWQCB-CCR)	NPDES Permit	Brine discharge addition to existing El Estero Treatment Plant ocean outfall discharge; may require new or modified permit
		Potentially required if hydrostatic test water from pipeline testing would be discharged into waters of the United States
Department of Health Services, Office of Drinking Water	Amended Domestic Water Permit	Required to assess quality of delivered water, proposed treatment facilities, etc.
LOCAL		
City of Santa Barbara, Community Development Department[e]	California Environmental Quality Act (CEQA) compliance - EIR	Construction, operation, and/or abandonment of project facilities and associated discretionary
	Community Priority Designation under Charter Section 1508	Compliance with Charter Section 1508
	Coastal Development Permit (assessment of consistency with Local Coastal Plan)	Onshore project components (decision appealable to California Coastal Commission)
	Building and Grading Permits	Desalination facility, site preparation, pipeline installation

Table 2-2. SUMMARY OF POTENTIALLY REQUIRED PERMITS, APPROVALS OR AUTHORIZATIONS (concluded)

Responsible Agency	Permit, Approval, or Review	Potentially Applicable To
LOCAL (continued)		
City of Santa Barbara, Public Works Department	Public Works Permits	Any facilities or improvements within the public right-of-way
City of Santa Barbara, Public Works Department	Industrial Wastewater Discharge Permit	Discharge of chemically treated brine to El Estero WWTP
City of Santa Barbara, Fire Department	Approval of Above Ground Storage of Hazardous/Flammable Materials (in accordance with Uniform Fire Code, Article 80)	Hazardous materials stored onsite at desalination facility or pump station/chemical treatment area
County of Santa Barbara, Health Care Services, Environmental Health	Hazardous Material Business Plan (AB 2185, et. al.) and possibly Acutely Hazardous Material Registration/Risk Management Prevention Program (RMPP)	Hazardous and possibly acutely hazardous materials stored onsite at desalination facility and/or pump station/chemical treatment area

[a] Other Federal agencies which may provide comments to Army Corps of Engineers (ACOE) include U.S. Fish and Wildlife Service, U.S. Coast Guard, and NOAA-National Marine Fisheries Service.

[b] ACOE would require Coastal Commission approval(s) prior to construction.

[c] The Coastal Commission can waive a Consistency Determination when a Coastal Development Permit is also required.

[d] The State Lands Commission typically consults with the State Historic Preservation Officer (SHPO) regarding potential impacts to cultural resources (e.g., shipwrecks) in State waters. This review/consultation would occur as a part of CEQA compliance process as well.

[e] Other State and local agencies without direct permit authority which may provide comments to the City regarding CEQA compliance include the California Department of Fish and Game and the Santa Barbara County Air Pollution Control District. The City Council adopted Ordinance 4640 on July 24, 1991. This ordinance waived certain procedural review requirements for all City sponsored temporary emergency water projects in the City.

An elevated section of Highway 101 adjacent to the north of the parcel is presently under construction. The El Estero WWTP lies immediately across Yanonali Street to the south. The Santa Barbara Rescue Mission is located across the Salsipuedes Street highway offramp immediately to the east. The City Corporation Yard Annex abuts the parcel's western boundary.

Access to the site is from Yanonali Street via Salsipuedes Street to the east, or currently from the Salsipuedes/Yanonali offramp from southbound Highway 101. This temporary offramp will be removed and replaced in function by a new Garden Street offramp to be constructed by CalTrans. The new Garden Street offramp is currently scheduled to be open to traffic by December 1991, and will eventually tie-in to Yanonali Street via a bridge over Laguna Channel.

2.3.3 Onshore Pump Station and Chemical Treatment Area

The proposed onshore pump station and chemical treatment area is located in the southeast corner of the City's existing El Estero WWTP (refer to Figures 1-1 and 2-2). The pump station and chemical treatment area are adjacent to the City's existing reclaimed water facility and will cover approximately 3700 square feet and 6000 square feet, respectively. The fenced area for the facility will cover about 0.6 acres. The site is generally flat and is located at an elevation of approximately 8 feet above MSL. The proposed onshore pump station is located on an area that is currently partially vegetated with ice plant and ornamental shrubs adjacent to the fencing that currently separates the El Estero WWTP from the adjacent City Fire Department Training Facility which is located south and east of the proposed facilities. Construction of the proposed facilities will require relocation of portions of the existing fencing and addition of new fencing around the perimeter of the new facility. Access to the site is via Quinientos Street.

2.3.4 Electrical Substation

In order to supply power efficiently for the proposed desalination project, a new 66 kV substation will be constructed in the north-central portion of the El Estero WWTP directly across Yanonali Street from the proposed desalination plant site (refer to Figure 2-1). The proposed substation will occupy an area of about 60 feet by 35 feet. The internal components will not exceed about 13 feet in height except for two, 22 foot high receiving poles. Electrical power (66 kV lines) will be brought on existing power poles from the SCE substation at the intersection of Quarantina and Gutierrez

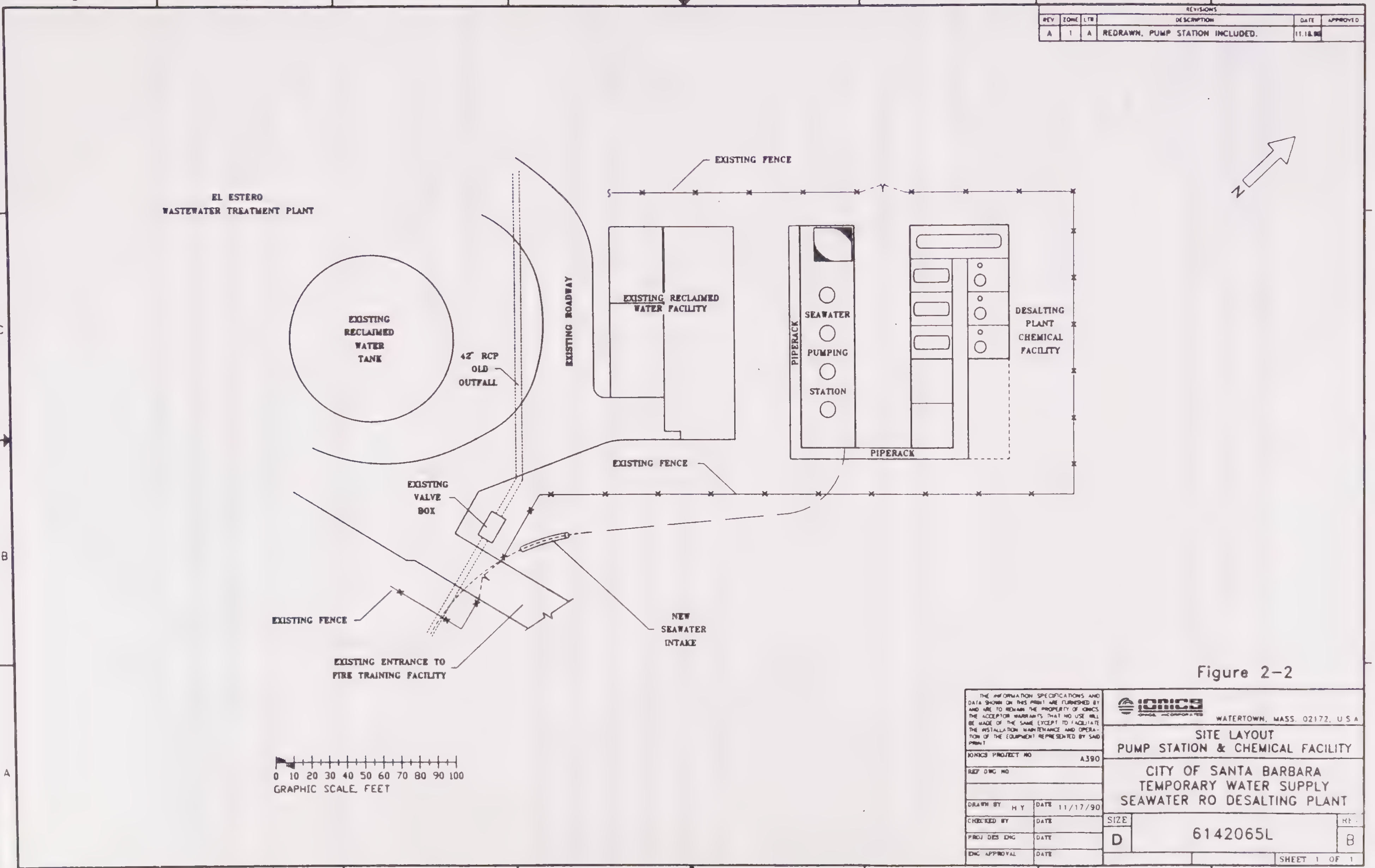


Figure 2-2

The information specifications and data shown on this print are furnished by and are to remain the property of Ionics. The acceptor warrants that no use will be made of the same except to facilitate the installation maintenance and operation of the equipment represented by said print	IONICS, INCORPORATED WATERTOWN, MASS. 02172, U.S.A.
IONICS PROJECT NO A390	SITE LAYOUT PUMP STATION & CHEMICAL FACILITY
REF DWG NO	CITY OF SANTA BARBARA TEMPORARY WATER SUPPLY SEAWATER RO DESALTING PLANT
DRAWN BY H Y / DATE 11/17/90	SIZE D
CHECKED BY / DATE	6142065L
PROJ DES ENG / DATE	REV B
ENG APPROVAL / DATE	SHEET 1 OF 1

Streets. Approximately 1 or 2 new power poles (22 to 25 feet in height) will be required along Yanonali Street to tie-in to the new substation. The substation will be fenced and landscaped to blend in with the existing El Estero WWTP building fronting Yanonali Street, as practicable.

2.3.5 Onshore Pipelines

Proposed onshore pipelines include the seawater intake line, the brine discharge line, water treatment chemical lines, and the finished water tie-in line(s) to the City water system (refer to Figures 1-1 and 2-1).

The landward portion of the proposed seawater intake line will be located within existing water and effluent line easements in the paved roads which run along the northern, western and eastern boundaries of the El Estero WWTP, and within the unused effluent outfall which extends seaward from the southeast corner of the wastewater plant. The polyethylene intake line insert will run inside the unused outfall under the railroad, Cabrillo Boulevard, Chase Palm Park, and the beach.

The brine discharge line will follow the same route described above between the desalination plant site and the southeast corner of the El Estero WWTP site where the proposed pump station is located -- from this point, a new line will be constructed to the west along the south boundary of the wastewater plant property to the tie-in point (via existing manhole) with the existing ocean outfall line. An existing paved road runs along the southern boundary of the wastewater treatment plant where the new line tie-in will be constructed.

None of the areas where pipeline trenching will be required are vegetated. The land uses within (or over) the onshore pipeline routes include public utilities, industrial, public transportation, open space, park, and vacant land.

2.3.6 Seawater Intake Structure and Intake Pipeline

The proposed seawater intake structure will be located approximately 2500 feet offshore along the unused ocean outfall at a depth of approximately 28 to 30 feet below MSL. The dual intake structures would each cover an area of approximately 380 square feet on the ocean floor. The ocean floor in the area of the proposed intake structures contains the existing, unused 42-inch

(inside diameter) concrete outfall which is covered by armor rock and is surrounded by gently sloping sandy bottom.

The offshore portion of the proposed polyethylene intake line follows the generally northerly route of the unused outfall from the proposed intake structure location to shore. Elevations along the proposed offshore pipeline route vary from approximately 28 to 30 feet below MSL on the seaward end to approximately 8 to 10 feet below MSL at the beach (i.e., line is buried).

The offshore area where the proposed intake is located is used by marine vessels and for recreational boating.

2.3.7 Brine Discharge Line

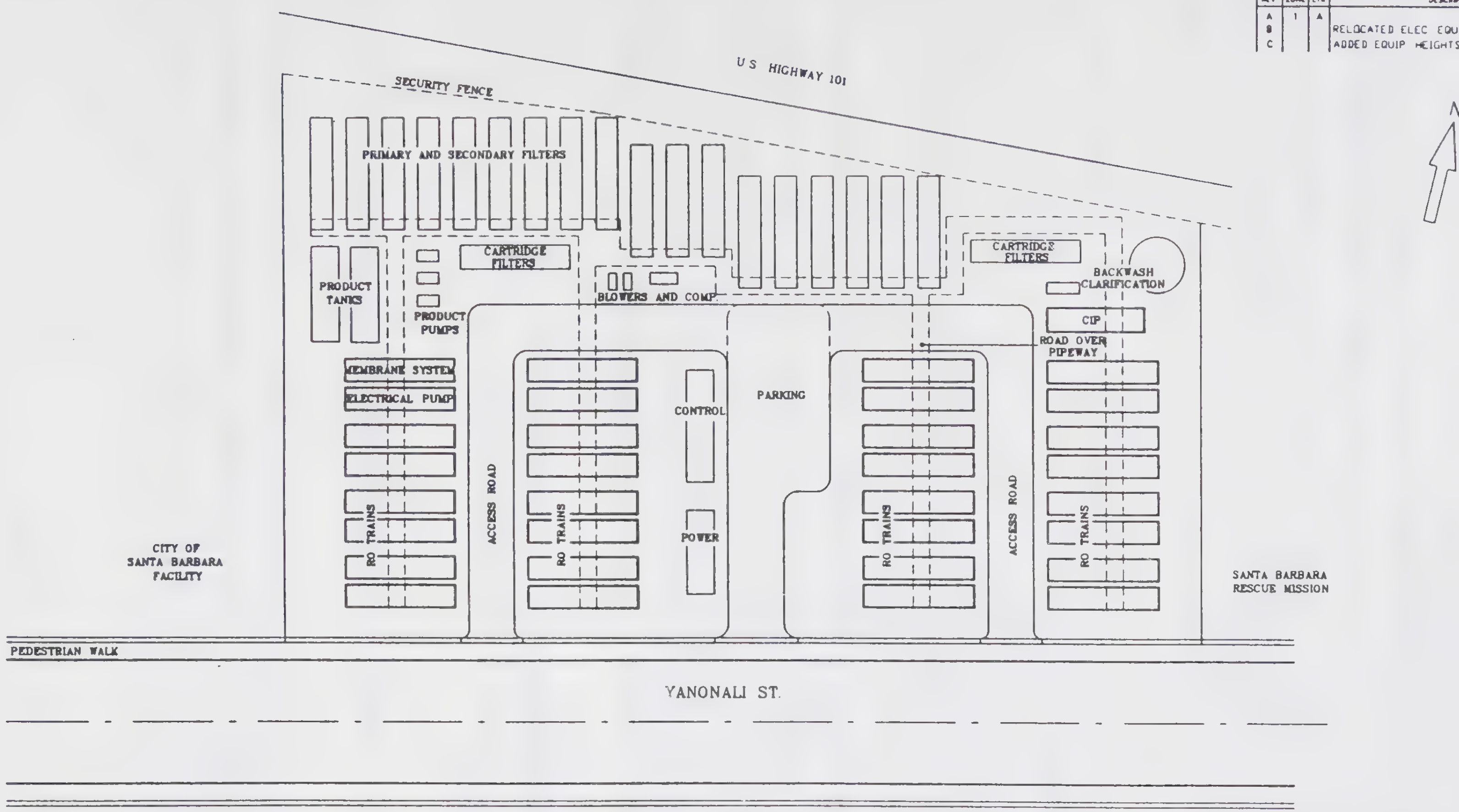
The brine discharge line is the existing operating ocean outfall line for the El Estero WWTP. The line was constructed in 1978 to replace the old outfall, which is the proposed desalination intake line for the desalination project. The offshore portion of this line runs in a southeast direction from shore to a distance of approximately 8700 feet offshore. The 700 foot long outfall diffuser on the seaward end is located at a depth of approximately 75 feet below MSL (refer to Figure 1-1). The area in the vicinity of the diffuser is currently off limits for shellfish harvesting and commercial fishing due to the discharge of secondary treated effluent. No kelp beds or other environmentally sensitive marine resources have been identified in the immediate vicinity of the outfall discharge area. Use of the offshore area above the outfall diffuser is limited primarily to marine vessel traffic.

2.4 PROJECT COMPONENTS

2.4.1 Desalination Facility

The proposed 10,000 AFY desalination facility consists of the following major components, as shown on Figure 2-3:

- Trailers containing reverse osmosis (RO) trains (high pressure pumps, energy recovery turbines, RO pressure tubes and membrane elements) (refer to Figure 2-4);



REV	ZONE	LTR	DESCRIPTION	DATE	APPROVED
A	1	A		11.18.90	
B			RELOCATED ELEC EQUIP	11.29.90	
C			ADDED EQUIP HEIGHTS	12/4/90	

0 10 20 30 40 50 60 70 80 90 100
GRAPHIC SCALE, FEET

NOTES:

1. REFER TO MATCH DRAWING 6142065 FOR RELATED CHEMICAL EQUIPMENT LAYOUT.
2. REFER TO DRAWING 6142080 FOR DETAILS OF THE RO TRAIN.
3. APPROXIMATE HEIGHTS OF EQUIPMENT ARE THE FOLLOWING

FILTERS & PRODUCT TANKS – 16 FT.
CARTRIDGE FILTERS & CIP – 10 FT
MEMBRANE SYSTEM & ELEC.-PUMP TRAILERS – 14 FT.
PUMPS, BLOWERS & COMP. – 8 FT
BACKWASH CLARIFICATION – 20 FT
CONTROL & POWER – 10 FT

Figure 2-3

IONICS PROJECT NO A390
REF DWG NO 6142076
DRAWN BY MAY DATE 11/21/90
CHECKED BY
PROJ DES ENG
ENG APPROVAL

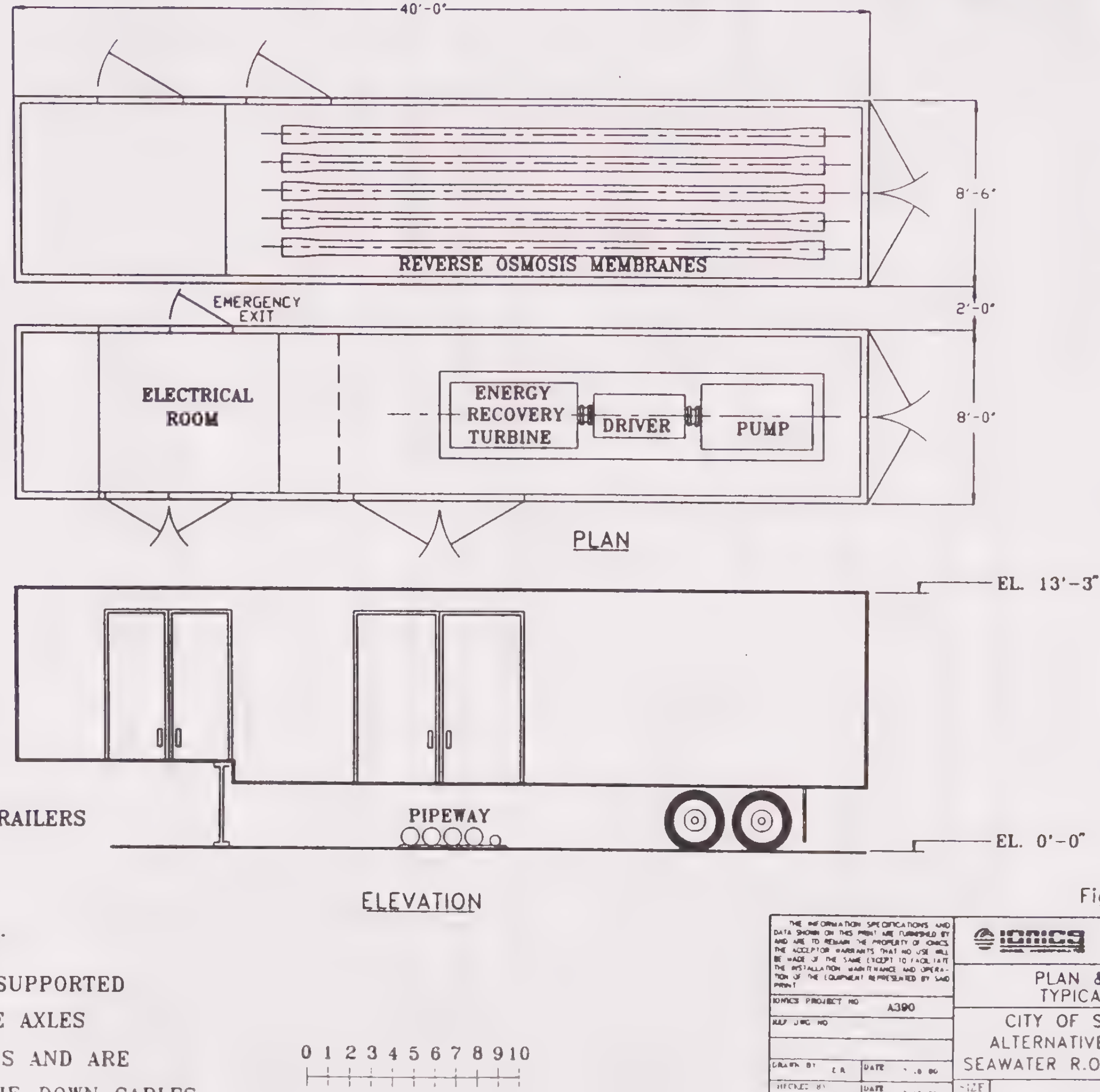
IONICS — WATERTOWN, MASS 02172, U.S.A.

SITE LAYOUT
10,000 ACRE FEET/YEAR

CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER RO DESALTING PLANT

SIZE D — 6142076L

REV.	ZONE	LTR	DESCRIPTION	DATE	APPROVED
A			REVISED TRAILER LENGTHS		
B			REVISED TRAILER LENGTHS		



NOTES:

1. APPROXIMATE OPERATING WEIGHTS OF TRAILERS ARE AS FOLLOWS:

   MEMBRANE TRAILER: 60,000 LBS.

   PUMP/TURBINE TRAILER 40,000 LBS.

2. DURING OPERATION THE TRAILERS ARE SUPPORTED ON SIX (6) JACKS, FOUR (4) UNDER THE AXLES AND TWO (2) UNDER THE FRONT CHASSIS AND ARE SECURED TO FOUNDATION SLABS WITH TIE-DOWN CABLES.

Figure 2-4

THE INFORMATION SPECIFICATIONS AND DATA SHOWN ON THIS PRINT ARE FURNISHED BY AND ARE TO REMAIN THE PROPERTY OF IONICS. THE ACCEPTOR WARRANTS THAT NO USE WILL BE MADE OF THE SAME EXCEPT TO FACILITATE THE INSTALLATION, MAINTENANCE AND OPERATION OF THE EQUIPMENT REPRESENTED BY SAID PRINT

IONICS PROJECT NO A390

REF DWG NO

IONICS — WATERTOWN, MASS 02172 U.S.A.

PLAN & ELEVATION
TYPICAL RO TRAIN

CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER R.O. DESALTING PLANT

SIZE D — 6142080L — REV B

SHEET 1 OF 1

- Skid mounted primary and secondary filters, cartridge filters, and product tanks;
- Containerized control room, office, and clean-in-place (CIP) systems;
- Concrete pad mounted power distribution panels, product pumps, blower and compressor, backwash clarifier and filter; and
- Parking area and access roads.

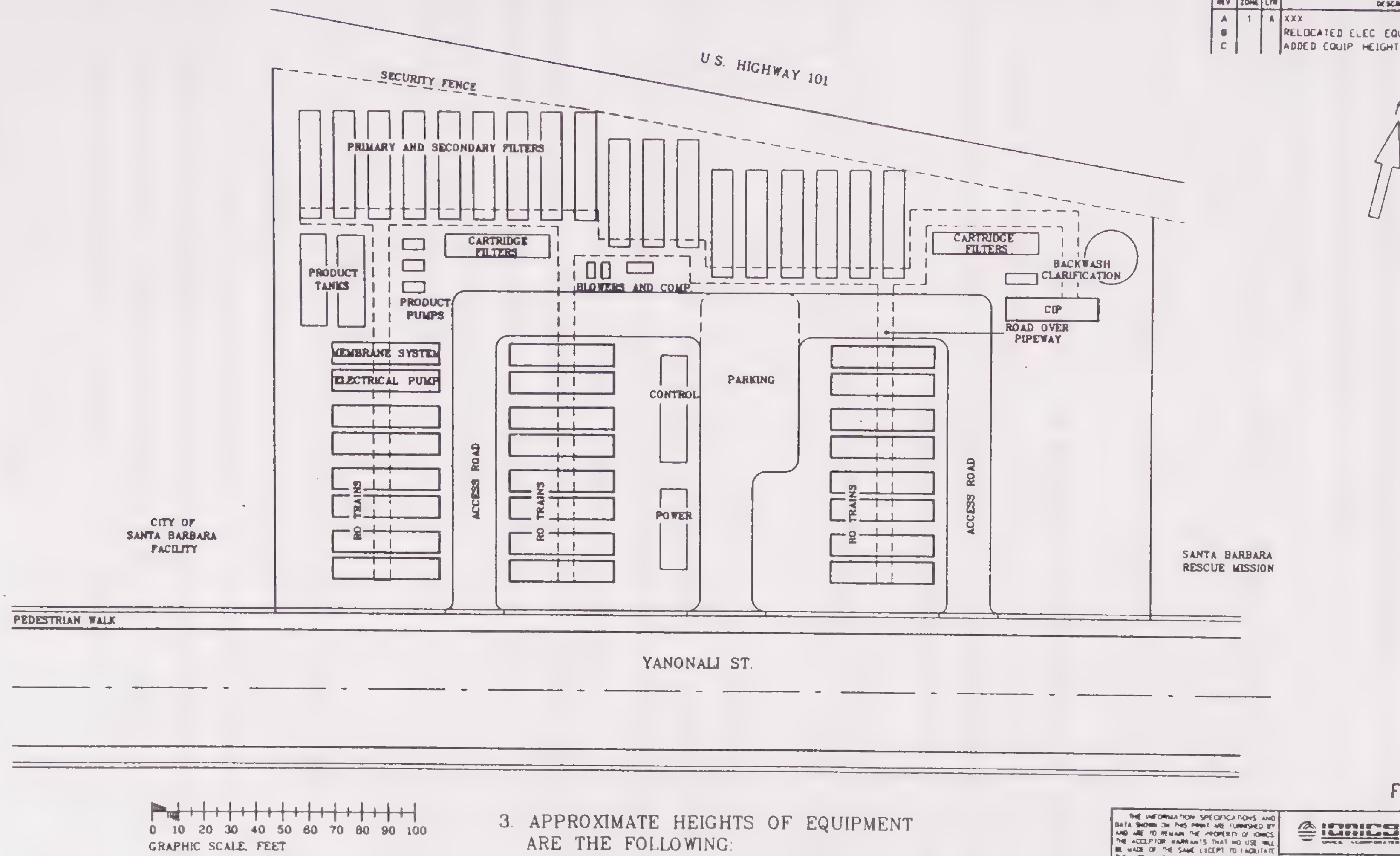
The tallest structure at the proposed desalination facility will be the backwash clarification tank which will be about 20 feet in height above the finished slab foundation grade. Approximate dimensions of facilities are included on Figure 2-3 for the proposed 10,000 AFY facility, and on Figure 2-5 for the 7500 AFY option.

Each proposed desalination unit consists of two (2) trailers (refer to Figure 2-4). Interconnecting piping will be at grade level under the trailers. One trailer will contain the RO feed pump, its motor and associated energy recovery turbine, and electrical room. The electric room will contain motor controls and related electrical and control equipment. The pump/motor/turbine portion of the trailer will be insulated to reduce the noise level which is apparent to the passerby outside the trailers.

The second trailer would contain the RO pressure tubes which enclose the membrane elements that accomplish the desalting. These tubes are mounted in racks with space and doors for access for maintenance.

Each desalination unit will be capable of producing 668 AFY (596,000 gallons per day) at 100 percent load factor. The proposed 10,000 AFY facility would consist of 16 desalination units, while the 7500 AFY option would consist of 12 units. The plants are designed with reserve capacity to allow time for maintenance and for the possibility of reduced production related to unsuitable seawater conditions (e.g., high turbidity during storms). The rated production capacity, 7500 or 10,000 AFY, can be achieved with a 7 percent reserve at the minimum expected seawater temperature of 10° C and with a 19 percent reserve at the expected average seawater temperature of 15°C.

REVISIONS					
REV	ZONE	LTR	DESCRIPTION	DATE	APPROVED
A	1	A	XXX	11.16.90	
B			RELOCATED ELEC EQUIP	11.29.90	
C			ADDED EQUIP HEIGHTS	12/4/90	



NOTES:

1. REFER TO MATCH DRAWING 6142065 FOR RELATED CHEMICAL EQUIPMENT LAYOUT
2. REFER TO DRAWING 6142080 FOR DETAILS OF THE RO TRAIN
3. APPROXIMATE HEIGHTS OF EQUIPMENT ARE THE FOLLOWING:

FILTERS & PRODUCT TANKS – 16 FT.
CARTRIDGE FILTERS & CIP – 10 FT.
MEMBRANE SYSTEM & ELEC.-PUMP TRAILERS – 14 FT
PUMPS, BLOWERS & COMP. – 8 FT
BACKWASH CLARIFICATION – 20 FT
CONTROL & POWER – 10 FT

Figure 2-5

IONICS INCORPORATED, WATERTOWN, MASS. 02172, U.S.A.

SITE LAYOUT
7,500 ACRE FEET/YEAR

CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER RO DESALTING PLANT

IONICS PROJECT NO	A390
REF DWG NO	6142072
DRAWN BY HAY	DATE 11/21/90
CHECKED BY	DATE
PROJ. DES. ENG	DATE
ENG. APPROVAL	DATE
SIZE D	6142072L

The completed desalination facility will be surrounded by an existing chain link fence on the north side, a new chain link fence on the east side (in addition to the existing wall in front of the Rescue Mission), a new 5.5 foot tall white stucco wall to match that of the adjacent City Corporation Yard on the south side along Yanonali Street, and the existing wall that separates the site from the adjacent City Corporation Yard on the west side. Ornamental shrubbery (oleanders) will be planted around the fenced/walled perimeter on all sides except the west. An artist's rendering of the proposed 10,000 AFY facility as viewed from an elevation of about 100 feet above and adjacent to the freeway is shown on Figure 3.8-1 (Visual Aesthetics section).

2.4.2 Pump Station and Chemical Treatment Area

The proposed pump station and chemical treatment area are located near the southeast corner of the El Estero WWTP as shown on Figures 1-1 and 2-2.

The proposed pump station and chemical area for the 10,000 AFY project consists of the following major components:

- Seawater intake pumping facility (25 feet by 100 feet) with four, 40 foot deep shafts (9 foot diameter) with pumps that connect to abandoned outfall/proposed seawater intake line; each electric pump would be rated at 250 HP;

- Chemical facility with chemical storage and transfer area (with specially treated concrete containment), chemical feed pumps, and associated piping and metering systems, including interconnection with incoming seawater lines, El Estero WWTP chemical supply storage areas (e.g., chlorine~~, and sulfur dioxide~~), and desalination facility; and

- Access driveway and truck turnaround area.

The purpose of the proposed pump station is to provide the energy required to carry the incoming seawater through the pretreatment filters and to deliver it to the feed pumps for the RO membrane system. The proposed pumping station is located near the existing valve box where the 42-inch former outfall enters the City's El Estero WWTP property. At this point, the proposed 36-inch

polyethylene liner in the outfall (which is the proposed seawater intake) will be connected to the pretreatment filter feed pumps in a manifold arrangement. There will be one pump for each 2,500 AFY increment of desalting capacity; thus, four (4) pumps for the proposed 10,000 AFY project, and three (3) pumps for the 7,500 AFY option.

The pumps would each be rated at 4,000 gallons per minute (gpm) at approximately 150 feet of discharge head and each would be equipped with a 250 horsepower electric motor.

The proposed station consists of a pump area, a series of "tubes" each containing an intake pump, an electrical services room, and adjacent space for maintenance. The pump tubes will be approximately 9 feet in diameter and 40 feet deep. The pumping station and the arrangement of pump suction and discharge piping will include space and fittings for chemical additions related to pretreatment and to pigging the line from the intake to the station. Intake piping will be below grade and discharge piping will be above grade for a short expanse at the station.

The subsurface shafts for the pump station will be constructed of concrete or fiberglass - reinforced plastic. The area will be paved or covered with gravel. The maximum height of the piping or equipment is approximately 7 feet.

The chemical treatment area will be surrounded by an 8 foot tall chain link fence. The chemical storage area will be lined with a specially treated concrete containment structure to prevent offsite runoff in the event of an accidental spill. Electric power equipment will be in a separate enclosure adjacent to the chemical facility. Material stored in drums, service tanks and chemical pumps will be under a cover for protection from sun and weather.

2.4.3 <u>Onshore Pipelines</u>

Proposed onshore pipelines include the following:

- Seawater intake line

- Brine discharge line

- Water treatment chemical lines
- Finished water tie-in lines, to City water system

2.4.3.1 Seawater Intake Line. The onshore portion of the proposed seawater intake line will consist of 36-inch diameter high density polyethylene pipe which will be lined inside the existing, buried abandoned 42-inch outfall between the weir/manhole on the beach and the proposed pumping station. The portion of this line between the pumping station and the desalination facility will also consist of 36-inch polyethylene pipe which will be buried along the southeast and northwest sides of the El Estero WWTP and then east down Yanonali Street to the desalination plant site. The onshore portion of this line is approximately 930 feet long between the weir/manhole on the beach and the valve box at the proposed pumping station, and approximately 1800 feet long between the pumping station and the desalination facility.

2.4.3.2 Brine Discharge Line. The onshore portion of the proposed brine discharge line consists of a 30-inch diameter polyethylene pipe which will be installed and buried on existing City-owned property between the desalination plant site and the interconnection point with the existing El Estero WWTP ocean outfall line near the southwest corner of the treatment plant. The onshore portion of this existing discharge line is approximately 900 feet long. The capacity of the existing ocean outfall is approximately 35 million gallons per day (MGD), and the City currently discharges about 6.5 million gallons per day of secondary treated effluent via this line. The average discharge prior to the drought was approximately 9 million gallons per day. Current minimum flow rates are about 1 million gallons per day at nighttime (Acosta, 1990).

2.4.3.3 Water Treatment Chemical Lines. Several water treatment chemical lines are proposed for transferring chemicals between chemical storage areas at the El Estero WWTP and the proposed onshore chemical treatment area, and between the proposed chemical treatment area and the proposed desalination facility. This piping will be below grade and will consist of 1-inch diameter polyethylene lines for the chemicals sleeved inside of a larger line for secondary containment. Dilute chlorine solution (hypochlorite) will travel from the WWTP to the pump station and from the WWTP to the desalting site. ~~Dilute sulfur dioxide solution will travel from the WWTP to the desalting site.~~ Antiscalant and caustic soda will travel from the chemical facility to the desalting site. Piping for carbon dioxide, ferric chloride and polyelectrolyte will travel above grade from the chemical facility to the adjacent pump station.

Other relatively minor intrafacility lines will also be required.

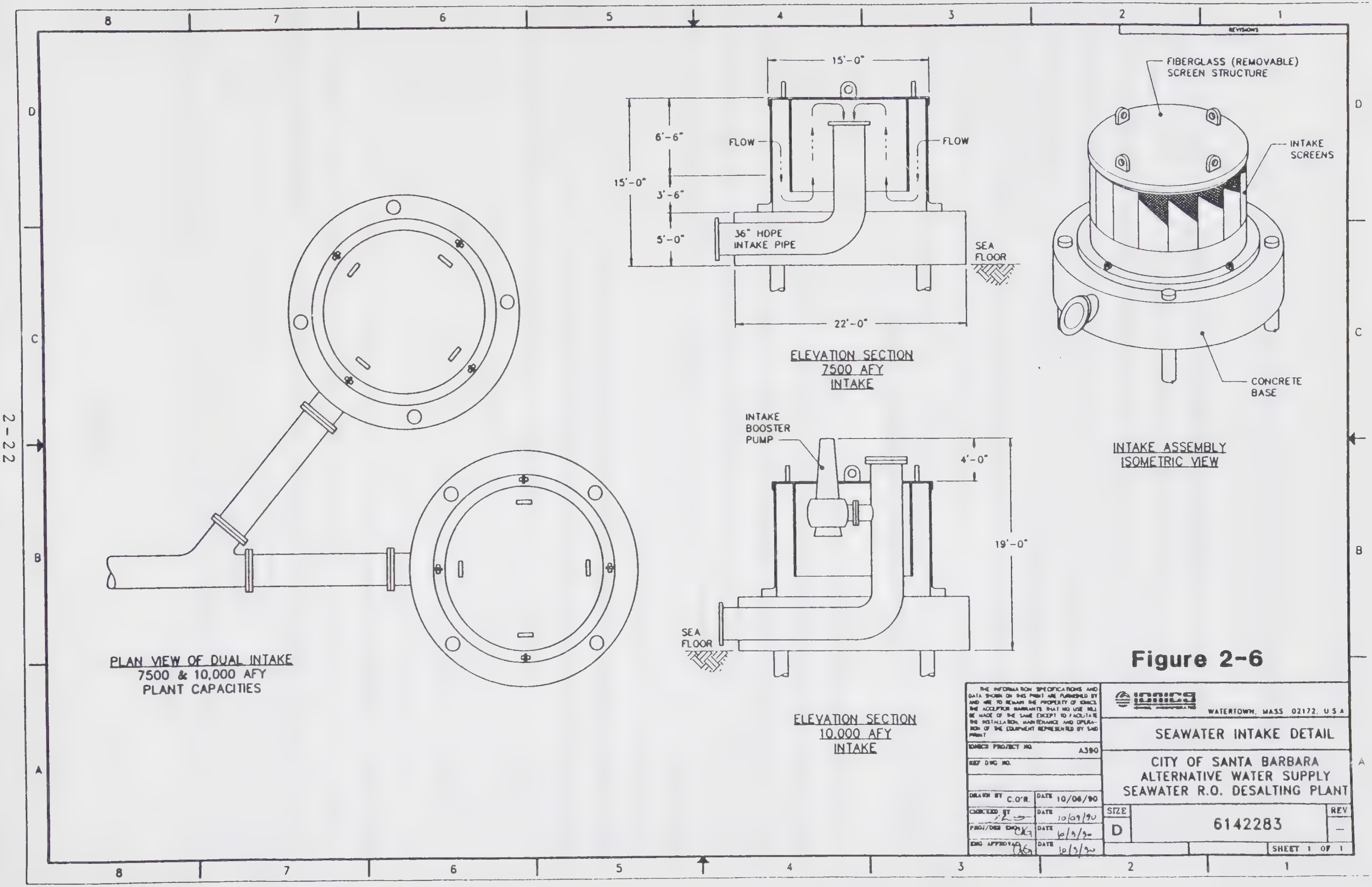
2.4.3.4 Finished Water Tie-In Line(s) to City Water System. Finished water will be delivered to the City water distribution system by constructing an approximately 50 foot long pipeline that will tie-in to the existing City water main in Yanonali Street near the southwest corner of the proposed desalination facility. The design capacity of this tie-in line will be approximately 7000 gallons per minute (gpm) and the maximum design operating pressure would be 150 psig. Refer to Appendix A for information on potentially required modifications to the City's existing water distribution system in order for the City to be able to distribute the last 2000 AF from a 10,000 AFY desalination facility.

2.4.4 Offshore Seawater Supply Line and Intake Structure

The offshore portion of the seawater supply line will consist of 36-inch diameter polyethylene pipe which will be lined inside the existing abandoned 42-inch concrete outfall between the weir/manhole on the beach and proposed offshore intake structure. The proposed offshore intake line will extend approximately 2500 feet south from the weir box on the beach to the proposed offshore intake location. The intake location will be clearly marked with a warning buoy and lighting for safety purposes.

The proposed offshore intake structure design is illustrated on Figure 2-6. The proposed intake design will limit the seawater intake flow velocity to less than 0.1 feet per second to reduce impingement and entrainment of marine organisms. Each of the two proposed dual intake structures will be pre-fabricated and consist of the following components:

- Four wood piles;
- Concrete base;
- Fiberglass removable screen structure (360° cylinder; 15 foot diameter and 10 feet high); and
- 36-inch diameter intake pipe with submerged electric intake booster pump (250 HP), if needed.


REVISIONS
15'-0"
6'-6"
15'-0"
3'-6"
5'-0"
FLOW
FLOW
36" HDPE
INTAKE PIPE
SEA
FLOOR
22'-0"
ELEVATION SECTION
7500 AFY
INTAKE
FIBERGLASS (REMOVABLE)
SCREEN STRUCTURE
INTAKE
SCREENS
CONCRETE
BASE
INTAKE ASSEMBLY
ISOMETRIC VIEW
INTAKE
BOOSTER
PUMP
4'-0"
19'-0"
SEA
FLOOR
ELEVATION SECTION
10,000 AFY
INTAKE
PLAN VIEW OF DUAL INTAKE
7500 & 10,000 AFY
PLANT CAPACITIES
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PROJ/DES ENG. DATE 10/9/90
ENG APPROVAL DATE 10/9/90
WATERTOWN, MASS 02172, U.S.A
SEAWATER INTAKE DETAIL
CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER R.O. DESALTING PLANT
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6142283
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SHEET 1 OF 1

Figure 2-6

The proposed dual intakes will have an approximate base diameter of 22 feet and an overall height above the ocean floor of approximately 19 feet for the proposed 10,000 AFY project and about 15 feet for the 7500 AFY option. Seawater depth in the vicinity of the proposed intake structure is about 30 feet (i.e., about 11 foot clearance for 10,000 AFY and 15 foot clearance typically for 7500 AFY scenarios). These clearance depths will decrease by at most two feet during low tide or during minus tides (i.e., to as little as 9 feet for proposed 10,000 AFY project intake).

2.4.5 Brine Discharge Tie-in Line and Existing Outfall Details

Seawater brine from the desalination process will be discharged along with secondary treated sewage effluent via the City's existing El Estero WWTP ocean outfall (refer to Figures 1-1 and 2-1). A new onshore pipeline will be constructed between the proposed desalination facility and the tie-in point with the existing outfall near the southwest corner of the El Estero WWTP. Booster pumps at the desalination plant will supply the energy for the brine to enter the outfall.

The existing 48-inch diameter outfall proceeds in a generally southeast direction from the El Estero Treatment Plant and terminates at a diffuser on the ocean floor approximately 8700 feet offshore. The outfall is designed to handle flows of over 30 MGD and is currently permitted to discharge up to 11 MGD. The outfall currently discharges an average of about 6.5 MGD (Acosta, 1990). The brine discharge from the proposed 10,000 AFY desalination facility will average about 13 MGD. A new or revised National Pollutant Discharge Elimination System (NPDES) permit will be required from the Regional Water Quality Control Board to allow the brine to be combined with the existing El Estero WWTP effluent.

The diffuser on the offshore end of the outfall is located in about 75 feet of water (refer to Figure 1-1). The 700 foot long diffuser was designed to facilitate initial dilution and dispersion of the effluent discharged to the ocean receiving waters.

2.4.6 Electrical Supply

It is currently estimated that about 2 megawatts (MW) of electrical power will be required for each 2500 AFY increment -- i.e., 8 MW for proposed 10,000 AFY facility and 6 MW for 7500 AFY option.

The proposed desalination facility and all related pumps will be run on electricity to be supplied by existing excess capacity in the Southern California Edison (SCE) grid. Excess capacity is estimated to be about 15 percent in the southwest United States (General Atomics, et al., 1988).

Due to space limitations at the desalination facility site, it is currently proposed that a 66 kV substation be constructed on the north-central portion of the El Estero WWTP. The proposed substation will require about 2100 square feet of space and will have maximum electrical component heights of about 22 feet. The substation will be fenced for security and safety purposes and landscaped. Electrical power (66 kV) would be brought on existing poles from the existing SCE substation at Quarantina and Gutierrez Streets; approximately 1 or 2 new power poles will be required on Yanonali Street.

Electrical cables will be buried between the new substation and the desalination facility (12 kV) as well as the onshore pump station (12 kV). The proposed 10,000 AFY project may also require an offshore submerged electrical pump at the offshore intake -- this will involve inserting a power supply cable inside of the unused outfall adjacent to the polyethylene intake pipeline insert.

2.5 CONSTRUCTION ACTIVITIES

2.5.1 Onshore Components

Construction activities for the proposed desalination plant will include: site clearing and grading; installation of underground utilities and piping; civil work, including placement of foundations and walls; installation of major equipment; piping and electrical work; installation of desalination trailers; testing and commissioning; and finish work and landscaping.

Construction activities for the proposed onshore pumping station and chemical treatment area will include: site clearing and grading; excavation and dewatering for the four, 40-foot deep pump tube shafts; installation of subsurface utilities and piping; placement of foundations and walls; major equipment installation; piping and electrical work; testing; and finish work and landscaping.

Construction activities for onshore pipelines between proposed facilities at the El Estero WWTP and the proposed desalination facility site will include: right-of-way clearing, grading and locating

existing buried utilities; pipeline trenching, installation, backfilling, compaction and resurfacing; and testing.

The construction activities associated with installation of the onshore portion of the proposed seawater intake liner in the currently unused outfall are described below in Section 2.5.2 (along with the offshore portion of the intake).

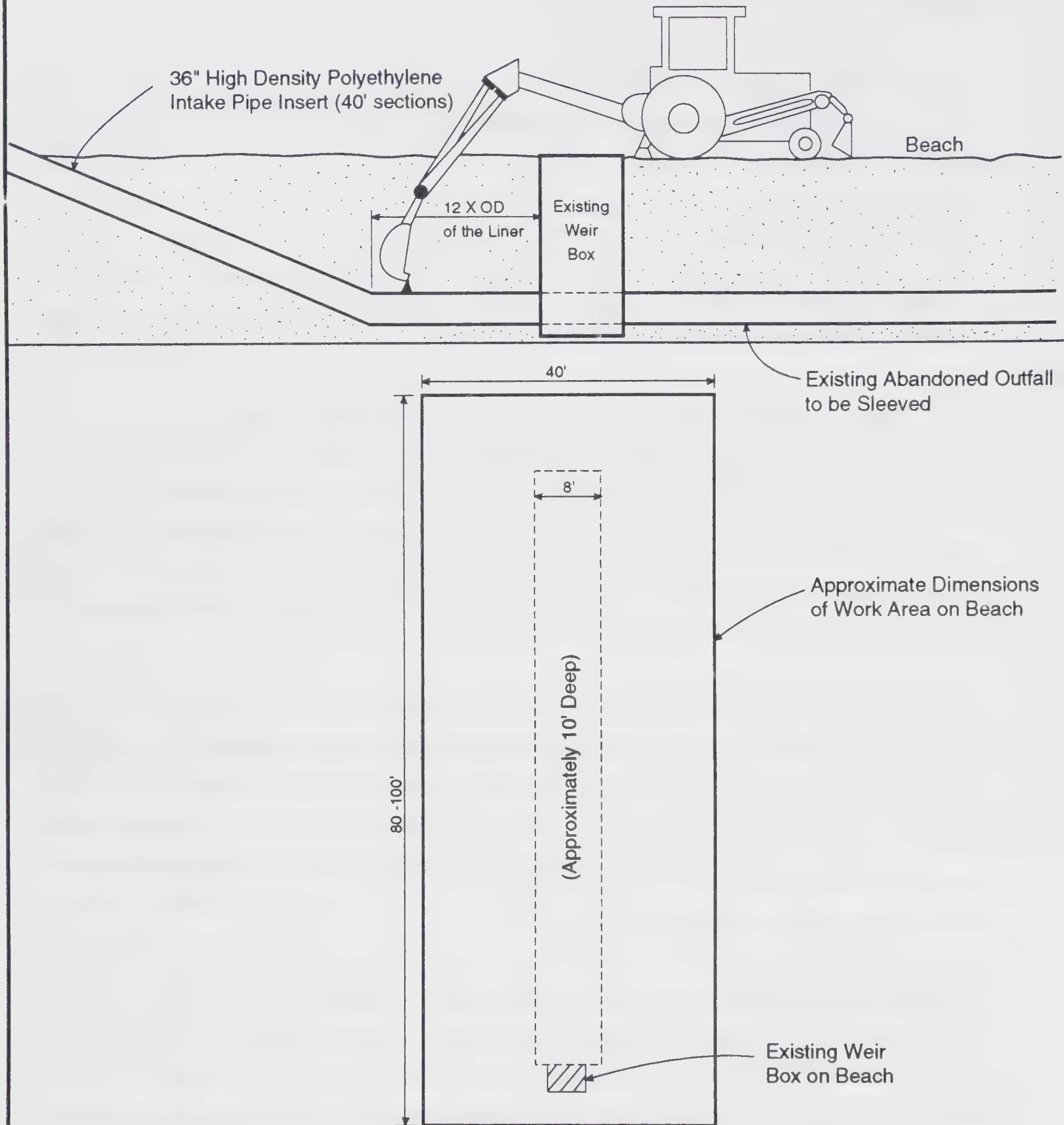
2.5.2 Offshore Components

Construction activities associated with installation of the proposed seawater intake and intake pipeline will involve both onshore and offshore activities.

2.5.2.1 Seawater Intake Line Installation. The proposed polyethylene seawater intake line will be introduced into the existing unused 42-inch diameter concrete outfall line from an existing weir box (manhole) on the beach (refer to Figure 2-7). An excavation on the beach will be required to expose the side of the weir box and to introduce the liner into the existing outfall line in both directions. The weir box area excavation will be approximately 10 feet deep, 80 to 100 feet long, and 8 feet wide at the bottom (with angled side slopes). This excavation will exist for 2 months and it will be backfilled and recompacted following liner installation.

The polyethylene liner will be delivered in 40-foot-long sections which will be fused or "welded" into a continuous length at the beach marshalling/work area as the line is pushed into the outfall line through an opening cut in the side wall(s) of the weir box. A wheeled "butt fusion" machine would be used to melt and fuse the pipe sections together. Each 40-foot section of 36-inch diameter polyethylene pipe weighs about 3000 pounds and will require a small back hoe or mobile crane to move and position pipe sections. A marshalling/work area will be required around the excavation on the beach as shown schematically on Figure 2-7.

Approximately 3,430 feet of liner will be installed, 930 feet north from the weir box on the beach to the valve box at the proposed onshore pump station (at the El Estero WWTP), and about 2500 feet south from the weir box to the offshore subsea intake structure. A recently performed reconnaissance of 1200 feet of the unused outfall indicates that the pipe and joints are in good condition. Some sand has entered and accumulated in the outfall and will need to be removed prior to liner installation. The sand will be removed by circulating seawater through the outfall or by use



Project No. 906B140A	Santa Barbara Emergency Water Supply Project	Figure 2-7. PROPOSED INTAKE LINER INSTALLATION TECHNIQUE FROM WEIR BOX ON BEACH
Woodward-Clyde Consultants		

of a waterjet probe deployed from the offshore end of the outfall. It is currently estimated by Ionics that about 250 cubic yards of sand may need to be removed from the outfall to the adjacent seafloor at the point(s) of removal.

If broken sections are found along the old outfall, the section(s) will be uncovered, cleared, and repaired as necessary to allow the liner to pass without obstruction.

2.5.2.2 Seawater Intake Structure Installation. At a point approximately 2500 feet south from the weir box on the beach, several sections of the unused outfall will be removed and the liner will be positioned for connection to the intake structures. Concrete weights may be required to hold down the naturally buoyant polyethylene pipe depending on the amount of exposed pipe between the outfall end and the intake structure.

The intake structure (refer to Figure 2-6) will be prefabricated and consist of a concrete base, fiberglass-plastic screen structure, and the screens. The base will be lowered to the seafloor from a barge and then oriented and leveled for connection to the polyethylene liner. Once in position, four piles would be driven and grout will be placed to secure the base to the piles. The fiberglass sections will then be lowered and mechanically secured to the concrete base. The end of the intake pipe will be flanged to the screened intake structure. All man-made construction debris will be removed following completion of intake installation. This process will take no longer than 1 month.

2.5.3 Construction Equipment Requirements

Construction of the proposed desalination facility project will require both onshore and offshore equipment. Major equipment requirements include earthmoving equipment, trucks, cranes, barges, and service boats. Estimates of construction equipment requirements are presented by activity in Table 2-3. R10-2

In order to limit air quality related effects during the construction phase, the following measures will be undertaken by Ionics:

- **The construction site shall be watered daily or as necessary to control wind-borne dust; reclaimed water will be utilized as practical. Watering frequency will be**

Table 2-3. ESTIMATES OF CONSTRUCTION EQUIPMENT

Proposed Facility/ Activity	Estimated Equipment Numbers by Type[a]						
	Graders	Bulldozers[c]	Backhoes[d]	Total Material Deliveries[e]	Cranes[f]	Barges	Service Boats
DESALINATION PLANT AND ELECTRICAL SUBSTATION							
Mobilize, Clear, Grade	1	1	--	2	--	--	--
Underground Utilities and Piping	--	--	2	20	1	--	--
Civil Work -- Foundations and Walls	--	--	1	300	1	--	--
Major Equipment Installation	--	--	1	100	1	--	--
Piping and Electrical Work	--	--	1	50	1	--	--
Desalination Trailer Installation	--	--	--	40	--	--	--
Testing and Commissioning	--	--	--	--	--	--	--
Finish Work, Landscaping	--	--	--	1	1	--	--

Table 2-3. ESTIMATES OF CONSTRUCTION EQUIPMENT (continued)

Proposed Facility/ Activity	Estimated Equipment Numbers by Type[a]						
	Graders	Bulldozers[c]	Backhoes[d]	Total Material Deliveries[e]	Cranes[f]	Barges	Service Boats
PUMP STATION AND CHEMICAL TREATMENT AREA							
Mobilize, Clear, and Grade	1	1	--	2	--	--	--
Underground Utilities and Piping	--	--	1	10	--	--	--
Civil Work -- Foundations, Walls	--	--	1	200	--	--	--
Major Equipment Installation	--	--	1	50	1	--	--
Piping and Electrical Work	--	--	1	30	1	--	--
Testing	--	--	--	--	--	--	--
Finish Work, Landscaping	--	--	1	1	--	--	--

Table 2-3. ESTIMATES OF CONSTRUCTION EQUIPMENT (continued)

Proposed Facility/ Activity	Estimated Equipment Numbers by Type[a]						
	Graders	Bulldozers[c]	Backhoes[d]	Total Material Deliveries[e]	Cranes[f]	Barges	Service Boats
ONSHORE PIPELINES							
Mobilize, Clear, and Grade	--	--	2	2	--	--	--
Trenching, Pipeline Installation, and Backfill	--	--	2	2	1	--	--
Testing	--	--	--	--	--	--	--
SEAWATER INTAKE AND INTAKE PIPELINE INSERTION							
Mobilize and Offshore Reconnaissance	--	--	--	1	--	1	1
Clear and Repair Old Outfall	--	--	--	1	--	1	1
Pipe Fusion and Insertion From Weir Box	--	1	1	20	1	--	--

Table 2-3. ESTIMATES OF CONSTRUCTION EQUIPMENT (concluded)

Proposed Facility/ Activity	Estimated Equipment Numbers by Type[a]						
	Graders	Bulldozers[c]	Backhoes[d]	Total Material Deliveries[e]	Cranes[f]	Barges	Service Boats
SEAWATER INTAKE AND INTAKE PIPELINE INSERTION							
Intake Structure(s) Installation	--	--	--	10	--	1	1

[a] All estimates are preliminary and subject to change.
[b] Refer to Table 2-2 for estimated construction workforce and to Table 2-3 for information on overlapping of facility construction activities.
[c] Largest anticipated is Caterpillar D9.
[d] Largest anticipated is 3 yard bucket.
[e] Largest delivery truck is 45 foot trailer.
[f] Largest anticipated is 50 ton capacity.

increased during windy conditions which are generally defined as winds in excess of 15 mph for 10 minutes or more.

- Ionics shall designate a person or persons to monitor the dust control program and to order increased watering as necessary.

- Following clearing, grading, and excavation activities, barren soil areas shall be treated to prevent wind erosion by seeding, regular watering, spreading soil binders, or similar treatment.

- Any earth-moving trucks hauling fill material from the construction sites shall be covered to prevent dust from escaping.

- Construction related truck traffic shall be scheduled for off peak periods to help reduce truck traffic and associated emissions.

- Ionics shall actively encourage carpooling by construction workers to help reduce vehicle traffic and associated emissions.

- All construction vehicles and equipment shall be properly maintained, tuned, and equipped with current emissions controls; as practical, combustion control techniques for NO_x emissions such as engine timing retard shall be implemented.

- For applicable equipment, Ionics shall substitute gasoline powered equipment for diesel powered equipment, and install catalytic converters on gasoline powered equipment.

2.5.4 Workforce and Schedule

The estimated peak construction workforces are included in Table 2-4 by time frame and construction area. The estimated construction schedule is presented in Table 2-5. Based on this construction schedule, including assumptions regarding activity phasing, the proposed project will involve a peak workforce of about 20 to start, and build up to a cumulative peak workforce of about 65 in month five.

Table 2-4. ESTIMATED CONSTRUCTION WORKFORCE[a,b]

Construction Areas	Estimated Daily Peak Workforce Per Day by Month												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Desalination Facility, Substation, Pump Station/Chemical Treatment Area, and Onshore Pipelines	8	30	38	45	50	48	44	40	23	28	28	5	12
Onshore/Offshore Intake Line Insertion From Beach and Offshore Intake Structure Installation	12	26	20	15	15	12	--	--	--	--	--	--	--
TOTALS	20	56	58	60	65	60	44	40	23	28	28	5	12

[a] All estimates are preliminary and subject to change.
[b] Source: Ionics, 1990.

Table 2-5. ESTIMATED CONSTRUCTION SCHEDULE

Proposed Facility/Activity	Months Following Initiation of Construction[a,b,c]
DESALINATION PLANT AND SUBSTATION[d]	
Mobilize, Clear, and Grade	Month 1
Underground Utilities and Piping	Month 2
Civil Work -- Foundations and Walls	Months 3 - 6
Major Equipment Installation	Months 3.5 - 8
Piping and Electrical Work	Months 5 - 11
Desalination Trailer Installation	Months 5.5 - 10.5
Testing and Commissioning	Months 5.5 - 14[d]
Finish Work, Landscaping	Months 7 - 8
PUMP STATION AND CHEMICAL TREATMENT AREA	
Mobilize, Clear, and Grade	Month 1
Underground Utilities and Piping	Month 2
Civil Work -- Foundations, Walls	Months 1.5 - 4.5
Major Equipment Installation	Months 4 - 5
Piping and Electrical Work	Months 5 - 6
Testing	Month 7
Finish Work, Landscaping	Months 7 - 8
ONSHORE PIPELINES[e]	
Mobilize, Clear, and Grade	Months 1 - 2
Trenching, Pipeline Installation, and Backfill	Months 0.5 - 5
Testing	Months 5 - 6

Table 2-5. ESTIMATED CONSTRUCTION SCHEDULE (concluded)

Proposed Facility/Activity	Months Following Initiation of Construction[a,b,c]
SEAWATER INTAKE AND INTAKE PIPELINE INSERTION	
Mobilize and Offshore Reconnaissance	Month 1
Clear and Repair Old Outfall	Months 2 - 3
Pipe Fusion and Insertion From Weir Box	Months 4 - 5
Intake Structure(s) Installation	Month 6

[a] All estimates are preliminary and subject to change.
[b] Listed months are inclusive.
[c] It is currently anticipated that construction could begin on about July 1, 1991.
[d] It is currently anticipated that the proposed 10,000 AFY project would require 14 months to be "on line"; however, 5000 AFY would be available 8 months following initiation of construction and 7500 AFY after 11 months.
[e] Excluding onshore portion of intake insert which is included under "Seawater Intake and Intake Pipeline Insertion."

The proposed 10,000 AFY desalination facility will require about 14 months to be constructed and "on line"; however, 5000 AFY will be online after 8 months and 7500 AFY after 11 months. After month nine the only construction activities occurring will be installation of additional desalination trailers and associated piping work -- all other onshore and offshore facilities will already be completed and operational.

2.5.5 Traffic Estimates

During the construction phase of the proposed project, construction related traffic will consist primarily of commuting workers in their personal vehicles and equipment delivery trucks. Estimates of truck traffic during the construction phase are presented in Table 2-6.

As a worst case, it can be assumed that each construction worker will drive a personal vehicle to the job site, although car pooling will be encouraged. Estimated peak daily construction workforce numbers, by month, are presented in Table 2-4. The estimated construction workforce numbers range from as low as five (5) in month 12 to as high as 65 in month five. Combined worst case truck and construction worker trips per day are estimated to be about 74 in month five of construction. Truck deliveries will be scheduled to avoid peak commute hours to reduce traffic impacts.

In order to ensure that construction-related traffic impacts are held to acceptable levels, a Project Transportation Management Plan will be prepared and implemented for the construction phase. This plan will require shifting or reducing the number of workforce commute trips occurring during the peak periods as well as scheduling the delivery of construction materials to occur out of the peak periods. Since the Southern Pacific Railroad is very close to the project sites, the possible delivery of construction materials by rail will be explored and implemented, if found to be feasible.

Table 2-6. ESTIMATES OF TRUCK TRAFFIC DURING CONSTRUCTION

Construction Areas	Estimated Maximum Daily Truck Trips by Month 1	2	3	4	5	6	7	8	9	10	11	12	13
Desalination Facility, Pump Station/Chemical Treatment Area, and Onshore Pipelines except Intake Line) and Substation	3	3	4	6	7	6	4	2	2	4	2	4	2
Onshore/Offshore Intake Line Insertion From Beach	2	2	4	3	2	2	2	0	0	0	0	0	0
Totals	5	5	8	9	9	8	6	2	2	4	2	4	2

2.6 OPERATION AND MAINTENANCE PROCEDURES

2.6.1 Desalination Plant

2.6.1.1 Normal Operation Procedures. The proposed desalination plant is designed for central operation from a computerized control system. The computerized system will be utilized by staff operators to monitor process conditions, log operating data and events, and to regulate operation, as appropriate. The plant is designed to operate primarily from the computerized control system, but operators will regularly visually inspect equipment and conduct basic analytical procedures during each shift to check water quality or verify instrument readings. Staff on day shifts will manage chemical supplies and perform scheduled maintenance.

2.6.1.2 Personnel and Traffic. The proposed desalination facility will be staffed with a manager, an assistant manager, and would be continuously attended by shift operators. The proposed 10,000 AFY and optional 7500 AFY facilities will have six (6) or five (5) weekday operators, respectively, and two (2) operators on evening, night, and weekend day shifts. The maximum number of staff at the plant at any one time during normal operating conditions is eight (8) and the total operational workforce is 14.

The proposed desalination project will contribute up to a maximum of eight (8) vehicles during peak traffic commute hours for staff during the operational phase of the project. Truck deliveries for equipment and supplies as well as offsite truck shipments of waste materials will average about six per week, including the pump station and chemical treatment area.

The maximum number of trucks on any given day will be three (3) during the operational phase.

2.6.1.3 Pre-Treatment of Seawater Feed .

Chlorination, Filtration, and De-Chlorination. Water must be free of sand or other particulate matter to a relatively high degree before it can be introduced into RO membrane desalting units. This would be accomplished in a system of primary and secondary media filter units that maintain a chlorinated environment to prevent bacterial or other growth in the filtration units. The necessary chlorine (or other disinfection agent) will be added to the seawater at the onshore

intake pumping station along with CO_2 for pH reduction and ferric chloride for coagulation of suspended solids. Chlorination of the incoming seawater will eliminate all microorganisms in the feedwater. Any residual chlorine present after the filtration pretreatment will be removed by the addition of ~~sulfur dioxide or~~ sodium metabisulfite (in water solution) prior to RO desalination. At normal flowrates, the seawater will reside in the chlorinated environment approximately 30 minutes for the proposed 10,000 AFY and optional 7500 AFY plants.

The two stage, primary and secondary filter system design recognizes the variations in suspended solids content characteristic of seawater in the Santa Barbara Channel. Also, a clarification system consisting of a tank and filter is provided to remove solids accumulated on the filters from the backwash water and allow the backwash to be added to the RO brine for disposal with the effluent from the WWTP.

Primary Filters. The proposed primary filters are dual media; i.e., sand and anthracite contained in horizontal, cylindrical, pressure vessels. They will be steel tanks mounted on steel frame bases with interior surfaces epoxy or rubber-lined for corrosion protection. Twelve (12) filters will be required for 10,000 AFY capacity and nine (9) for 7500 AFY capacity. Estimated filtration rates for primary filters are summarized as follows for the proposed 10,000 AFY project:

- Normal influent flow = 14,720 gpm
- Influent flow during backwash = 15,898 gpm
- Number of units/cells = 12/48
- Area per cell = 78.5 ft^2
- Normal filtration rate = 3.91 gpm/ft^2
- Filtration rate during backwash = 4.22 gpm/ft^2

Secondary Filters. Multimedia pressure filters will be used for secondary filtration. The vessel construction will be identical to the primary filters, but the bed of filter media will contain additional layers of garnet material.

Estimated filtration rates and data for secondary filters are summarized as follows for the proposed 10,000 AFY project:

- Normal influent flow = 14,720 gpm
- Influent flow during backwash = 15,898 gpm
- Number of units/cells = 6/24
- Area per cell = 78.5 ft^2
- Normal Filtration Rate = 7.81 gpm/ft^2
- Filtration rate during backwash = 8.44 gpm/ft^2.

Filter Backwashing. The primary and secondary filters will require periodic cleaning or "backwashing" to clear the accumulation of sand and solids which the filter will remove from the seawater. Backwashing will be a regular operating procedure, occurring automatically at timed intervals. Primary filters will be backwashed daily; secondary filters will require less frequent backwashing - about once every three (3) days.

Only a small segment of the operating filters will be backwashed at a time in order to allow the desalination plant operation to be continuous using filters which remain in service.

The backwash water is seawater supplied either from the filters which remain in service or from the filter feed pump line to the filters. The backwash flow is intermittent, occurring approximately 55 percent of the time for a 10,000 AFY plant. Before the backwash water is disposed of by combination with the RO reject brine, a clarification tank and belt filter system will remove approximately 75 percent of the solids for disposal by truck to an approved disposal location. The clarified backwash will be blended with the RO reject brine and discharged to the ocean via the existing El Estero WWTP outfall.

Cartridge Filtration and Scale Inhibition. The proposed primary and secondary filters are the process elements which are relied upon to produce seawater suitable for feed to the RO desalting units. However, an additional filtration step will be provided to guard the RO membranes against unexpected upsets or malfunctions. This protection will consist of multiple filters using wound polypropylene fiber filter cartridges. These cartridges will be changed three or four times per year.

Following the cartridge filters and prior to the RO units, an antiscalant will be added to the seawater to prevent precipitation of calcium salts in the concentrated brine of the RO units. The antiscalant is a polymer solution (polyacrylic acid). Also, a solution of ~~sulfur dioxide~~ sodium metabisulfite will be added to eliminate any residual chlorine.

2.6.1.4 Membrane Cleaning and Maintenance. The RO membranes will require periodic cleaning to remove organic and inorganic foulants and/or scale in order to maintain satisfactory membrane efficiency and throughput. Cleaning will not be a continuous operation -- the frequency will depend on the types and amount of buildup on the membrane surface. Typically, alkaline cleaners are used to remove organic fouling including biological matter whereas acid cleaners are used to remove calcium carbonate scale and other inorganic precipitates including iron. It is estimated that about four cleaning cycles will be required on an annual basis. Refer to Section 2.6.1.5 for information regarding RO membrane cleaning compounds and estimated usage.

2.6.1.5 Chemical Storage and Use. Chemical storage and/or use at the proposed desalination plant will consist of the following:

- Antiscalant and ~~sulfur dioxide~~ sodium metabisulfite added to influent at desalination plant between pretreatment filters and RO units to prevent precipitation of calcium salts and remove any residual chlorine;

- RO membrane cleaning chemicals for periodic membrane cleaning (refer to Table 2-7);

- RO membrane "pickling" chemicals to preserve membranes, as necessary, if plant is put "on hold" for extended period(s) (Table 2-7); and

Table 2-7. SUMMARY OF PROPOSED CHEMICAL STORAGE AND USE (10,000 AFY)

Location of Use	Chemical	Concentration (%)	Dosage (ppm)	Consumption (lb./day)	Purpose	Location of Storage[a]	Maximum Amount Stored	Method of Storage
DESALINATION PLANT								
	Polyacrylic Acid	35	2.9	480	Antiscalant	DSP	4800 lbs.	55 gal. drums
	~~Sulfur Dioxide~~	~~100~~	~~5.0~~	~~872~~	~~Remove Chlorine~~	~~EEWWTP~~	~~—~~	
	Carbon Dioxide	100	20.0	3308	pH Adjustment	DSP	64,000 lb.	Pressurized tank
	Sodium Metabisulfite	38	19.0	3396	Remove Chlorine	PSCA	74,000 lbs.	6000 gal. tank
Membrane Cleaners[b]								
	Sodium Hydroxide	0.1	–	–	–	PSCA	76,000 lbs.	6000 gal. tank
	Sodium-EDTA[c]	0.1-1.0	–	–	–	PSCA	1000 lbs.	100 lb. bags
	~~Sodium DSS[d]~~							
	STP[e]	1.0	–	–	–	PSCA	1000 lbs.	100 lb. bags
	TSP[f]	1.0	–	–	–	PSCA	1000 lbs.	100 lb. bags
	Hydrochloric Acid	0.5	–	–	–	PSCA	75 gal.	15 gal. carboy
	Citric Acid	2.0	–	–	–	PSCA	2000 lbs.	100 lb. bags
	Chlorine	–	–	–	–	EEWWTP	None	1 ton cylinders
	~~Sodium Hypochlorite~~							
	~~Alkaline cleaners~~							
	~~Surfactant solutions~~							
Pickling Chemicals - Long Term[g]								
	Propylene Glycol or Glycerine	20	–	48,000 (lbs./event)	–	None	None	None
	Sodium Metabisulfite	1.0		2400 lbs./event)		PSCA	6000 gal.	6000 gal. tank
Pickling Chemicals - Short Term[h]								
	Sodium Metabisulfite	1.0	–	2400 (lbs./event)	–	PSCA	6000 gal.	6,000 gal. tank

Table 2-7. SUMMARY OF PROPOSED CHEMICAL STORAGE AND USE (10,000 AFY) (concluded)

Location of Use	Chemical	Concentration (%)	Dosage (ppm)	Consumption (lb./day)	Purpose	Location of Storage[a]	Maximum Amount Stored	Method of Storage
DESALINATION PLANT (continued)								
	Sodium Hydroxide	50	54	4020	pH adjustment	PSCA	**76,000 lbs.**	**6000 gal. tank**
	Zinc Orthophosphate	40.6	12.8	952	Corrosion control	DSP	**70,000 lbs**	**6000 gal. tank**
	Chlorine	100	1.0	76	Disinfection	EEWWTP	**None**	1 ton cylinders
PUMP STATION/CHEMICAL AREA								
	Chlorine	100	5	880	Disinfection	EEWWTP	**None***	1 ton cylinders
	Ferric Chloride	40	25	4400	Coagulant	PSCA	**6000 gal.**	**6000 gal. tank**
	Polyelectrolyte	20	0.5	440	Filtration aid	PSCA	4800 lbs.	55 gal. drums
OFFSHORE SEAWATER INTAKE								
	Chlorine	100		150 (lbs./event)	Chlorination	**None**	**None**	150 lb. cylinders

Note: Chemical usage estimates are preliminary and subject to change.

[a] PSCA = Pump station/chemical area; DSP = desalination plant; and EEWWTP = El Estero Wastewater Treatment Plant.
[b] Membrane cleaning is not a continuous operation; the frequency of cleaning and cleaning solutions make-up will depend on the type of buildup -- i.e., alkaline cleaners are used to remove organic fouling and acid cleaners are used to remove calcium carbonate scale and other inorganic precipitates such as iron.
[c] EDTA = ethylene diamine tetra-acetic acid.
~~[d] DSS = dodecylsulfate.~~
[e] STP = sodium triphosphate.
[f] TSP = trisodium phosphate.
[g] Pickling chemicals would be used to prevent biological growth (and freezing, if applicable) on RO membranes during storage or plant shutdown. Listed consumptions are for chemical requirements for entire plant (10,000 AFY).
[h] Short-term storage is defined as one week or less.

* No additional chlorine storage will be associated with the proposed desalination project; chlorine will be delivered from existing facilities at EEWTP in dilute (0.3%) aqueous solution.

- Sodium hydroxide, zinc orthophosphate, and ~~chlorine~~ hypochlorite added to product water for pH adjustment, corrosion control, and disinfection, respectively.

All of the items listed above will potentially be used at the desalination plant, but some will be stored at the El Estero WWTP and/or proposed pump station/chemical treatment area and piped to the desalination plant site (e.g., ~~SO_2~~ or sodium metabisulfite, NaOH, ~~chlorine~~ or ~~sodium~~ hypochlorite). Refer to Table 2-7 for more information regarding proposed chemical usage and storage.

2.6.1.6 Solid Waste Generation and Disposal. Construction and operation of the proposed desalination project is expected to generate the following types of solid waste:

- Excess soil and vegetative debris from excavations and site preparation at pump station/chemical treatment area (estimated at about 800 cubic yards);

- Construction material wastes; and

- Marine residues from periodic cleaning of the intake pipe, sand, coagulant, and other particles removed by the filters, and cartridges from the cartridge filters.

It is expected that filter backwash solids will be produced as a regular process waste and that the quantities will be dependent on seawater conditions at the intake. Filter backwash will be run through a clarifier with a design removal capacity of about 75 percent for suspended solids. Assuming that suspended solids concentrations in the seawater feed will range from 10 to 50 parts per million (ppm), it is expected that suspended solids removal rates will vary from about 1.7 to 5.1 cubic yards per day. Filter backwash solids will be trucked to an approved disposal location at the estimated rate of one to two truckloads per week.

Marine residues and spent filter cartridges disposal will occur less frequently. It is expected that pipeline cleaning will be a monthly or bi-monthly operation. Filter cartridges will be changed three to four times per year and will be trucked to an appropriate solid waste disposal facility.

If any membrane elements fail during the project life, they will be removed for diagnosis and disposed of in an approved manner. It is expected that small quantities of waste will be generated from operation of a small office facility as well as from general cleanup and maintenance of the plant site. All wastes will be disposed of in accordance with prevailing regulations and recycling will be encouraged. Sanitary wastes will be disposed of via the City Sanitary Sewer.

2.6.1.7 Brine and Other Effluent Disposal. Liquid effluent streams that will normally be generated during operation of the proposed desalination project consist of:

- Brine discharge;
- Filter backwash; and
- Periodic process cleaning or maintenance procedure effluent such as pipeline flushing or RO membrane cleaning solutions.

Up to approximately 13.3 MGD of concentrated seawater brine (plus backwash much of the time) will be discharged to the ocean via the City's existing ocean outfall for its El Estero WWTP for the proposed 10,000 AFY project. The brine will be combined and mixed with the City's existing secondary treated effluent (currently about 6.5 MGD on an average basis [Acosta, 1990]) prior to offshore discharge. The estimated characteristics of the RO brine from the proposed desalination facility are presented in Table 2-8. This analysis is based on an RO system operating at 45 percent recovery from seawater. Only a small amount of salts pass through the RO membranes during the RO process. The effluent brine stream contains all salts which do not pass through the membranes. Assuming 45 percent recovery, the brine salinity will be slightly less than 1.82 times the seawater salinity. In addition to the constituents listed in Table 2-8, the RO brine will also contain:

- Antiscalant which is injected into the filtered seawater feed for scale control; and
- All particulates, suspended matter, coagulant, polyelectrolyte, and organics that are not removed by the primary and secondary media and cartridge filters.

Table 2-8. ESTIMATED RO BRINE CHARACTERISTICS[a]

Parameter	Estimated Concentration or Value [b]
Calcium	730 mg/l
Magnesium	2310 mg/l
Sodium	19,100 mg/l
Potassium	690 mg/l
Strontium	24 mg/l
Bicarbonate	240 mg/l
Sulfate	4850 mg/l
Chloride	34,400 mg/l
Fluoride	2 mg/l
Nitrate	2 mg/l
Silica	16 mg/l
Total Dissolved Solids	62,400 mg/l
pH	6.5-7.5
Carbon Dioxide	29 mg/l
Temperature	10 - 20° C

[a] Source: Ionics, Incorporated (1990).
[b] Values are approximate and based on computer projections.

Backwash discharge from the RO membranes would be clarified and combined on a semi-continuous basis with the brine discharge for offshore disposal. Backwashing would be a regular operation procedure occurring automatically at timed intervals approximately 55 percent of the time for the 10,000 AFY plant. Primary filters will be backwashed daily while secondary filters will be backwashed about every three days. The addition of the clarified backwash discharge to the brine reject and the treated sewage effluent is considered in Section 3.3 (Water Resources).

A summary of the existing effluent quality for the El Estero WWTP is included in Section 3.3 (Water Resources), as well as the estimated combined brine/El Estero WWTP effluent quality.

All cleaning chemicals, including acid and alkaline solutions, will be neutralized to City standards prior to discharge to the City sanitary sewer. Any cleaning compounds prohibited from discharge to the sewer by regulatory agencies will be handled separately and disposed of in an approved manner.

2.6.2 Pump Station and Chemical Treatment Area

The proposed onshore pump station and chemical treatment area will boost influent seawater feed to the desalination facility, introduce specific chemicals into the seawater feed, and pump chemicals through separate lines to the desalination facility for use at the RO plant.

The proposed pump station and chemical treatment area will be automated and will not require a full time operator. This facility will be within the El Estero WWTP facility and desalination facility staff will periodically monitor operating conditions and perform required maintenance. Operation of the chemical treatment facility will involve periodic truck deliveries of chemicals for resupply. Refer to Table 2-7 for information regarding chemical storage and use at the proposed pump station and chemical treatment area.

2.6.3 Seawater Intake

Operation and maintenance of the proposed seawater intake structure will involve periodic cleaning of marine life accumulations and sand which have settled in the structure. The frequency of cleaning will depend on seawater/intake conditions, but a bi-monthly cleaning schedule is planned.

The proposed intake design allows for two different cleaning techniques as conditions warrant. Individual intake screens could be removed, lifted to the surface, and cleaned on a service boat or brought to shore. Spare screen sections will be inserted in the place of removed sections. In addition, it will also be possible to remove the entire fiberglass-reinforced plastic portion of the intake as a unit for cleansing on the surface. Depending on the amount of biologic fouling which is encountered in the intake pipes, it may be necessary to periodically chlorinate the intake system. This operation will be performed by introducing the contents of one, 150 pound capacity chlorine cylinder into the intake (e.g., via a diver). If necessary, a pipeline "pig" (cleaner) will be introduced into the intake line on a periodic basis as well to clean obstructions.

During periods of extreme offshore sea conditions during the project life, if applicable, the intake could be shut down or actually removed, except for the concrete base, in order to protect it from damage or to repair it. A spare intake structure will be stored for emergency use, if necessary.

2.7 FINISHED WATER QUALITY

R7-1 R7-2 R7-3 R7-4

The RO product water will meet all primary and secondary drinking water standards, testing requirements, and procedures set forth in Title 22, California Code of Regulations, Environmental Health (1989). In addition, the proposed RO facility design will guarantee that the product water will comply with the following standards:

- Total Trihalomethane Formation Potential not to exceed 100 parts per billion (ppb) at the point of interconnection with the City main on Yanonali Street;

- Chlorine concentration will be in the range of 0.2 to 1.5 ppm (as required by City); and

- The finished water will be properly treated for corrosion control and compatibility with the existing water distribution system (as required by City).

Table 2-9 lists the computer projected water quality characteristics of the RO permeate and the RO product water (RO permeate post-treated with caustic soda for pH adjustment and zinc orthophosphate for corrosion control). In addition, Table 2-9 includes maximum allowable values for applicable drinking water standards.

Table 2-9. SUMMARY OF ESTIMATED FINISHED WATER QUALITY (MG/L UNLESS SPECIFIED OTHERWISE)

Parameter	RO Permeate			Post-Treated RO Product Water[b]			Maximum Allowable
	10°C	15°C	19°C	10°C	15°	19°C	
Calcium	2	2	2	2	2	2	--
Magnesium	5	7	8	5	7	8	--
Sodium	96	118	135	111	135	150	--
Potassium	5	6	7	5	6	7	--
Strontium	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	--
Bicarbonate	2	2	3	42	42	43	--
Sulfate	10	12	14	10	12	14	250(s)[c]
Chloride	163	199	230	163	199	230	250(s)
Fluoride	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	1.4-2.4
Nitrate	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	45(p)[c]
Phosphate	--	--	--	1	1	1	--
Silica	<1	<1	<1	<1	<1	<1	--
TDS	284	347	400	340	403	456	500(s)
pH	5.0	5.0	5.0	8.2	8.2	8.2	--
CO_2	29	29	29	Negl.	Negl.	Negl.	--
Turbidity, NTU		--	--	<1	<1	<1	--
Zinc	--	--	--	1	1	1	5
Total THM	25 ppb	25 ppb	25 ppb	25 ppb	25 ppb	25 ppb	100 ppb

[a] All values are approximate and based on computer projections (Ionics, 1990).
[b] Based on pH adjustment with caustic soda and corrosion inhibitor with zinc orthophosphate.
[c] (P) = Primary standards; (s) = Secondary Standards

2.8 ABANDONMENT PROCEDURES

After the term of agreement between the City and Ionics, Incorporated expires for the proposed desalination project, several options exist. These options include: removal of specified surface facilities by Ionics and associated restoration of disturbed areas; renegotiation of the agreement; or purchase of the facilities by the City. Any option other than the removal of the facilities will require environmental review and new or amended permits for the planned future use of the facilities.

In the event that the City elects the option for removal Ionics will, in accordance with the agreement with the City, remove all process equipment and above ground facilities at the pumping station, chemical facility and desalination site. Ionics is not obliged to remove underground pipelines or other underground portions of the project nor any concrete, paving, masonry or landscaping. The City may require removal of above ground concrete or masonry associated with the chemical storage area.

3.1 INTRODUCTION

This section includes a description of the existing environment at and surrounding the proposed onshore and offshore desalination project components. Assessments of environmental impacts that could occur as a consequence of the proposed desalination project area also presented. The project applicant has incorporated measures or procedures to mitigate potentially adverse environmental impacts into the project design -- these are included in Section 2.0 (Project Description). Additional mitigation measures, recommended by the EIR, are presented in this section, as appropriate, to further reduce possible significant environmental effects. A synopsis of environmental impacts and mitigation measures for the proposed project is presented in the Executive Summary section of this report.

3.2 GEOLOGY AND SOILS

3.2.1 Environmental Setting

3.2.1.1 General Environmental Setting. Components of the environmental setting described in this section include the topography, drainage, and soil conditions present in the vicinity of the proposed desalination project components. A discussion of geologic conditions is presented in Section 3.2.1.2.

Topography and Drainage. The City of Santa Barbara is located on a narrow, low-lying, alluvial plain situated adjacent and north of the Pacific Ocean. Topographically high areas surround the City on the north, west, and southwest. Natural drainage for the City is generally to the southeast.

The elevation at the proposed desalination facility site varies from about 8 to 11 feet above mean sea level (MSL). The site is nearly flat and drainage is by intermittent sheetflow to the north into an adjacent existing storm drain which drains west to Laguna Channel. Site drainage and the storm drain were designed by the City to adequately control site runoff. The proposed pump station/

chemical treatment area ranges in elevation from about 6 to 9 feet above MSL and drainage is currently in a northwest direction.

The offshore pipelines will be located along the gently sloping, sandy bottom ocean floor. The offshore intake structure will be approximately 28 to 30 feet below MSL. The outfall diffuser will be located approximately 78 to 80 feet below MSL.

Soils. The proposed desalination facility site and the pump station/chemical treatment area and vicinity are mapped by the USDA Soil Conservation Service (SCS) as an aquent or fill area (AC). These areas are characterized by the SCS as being reclaimed by the filling of low, poorly drained areas near the ocean. The water table is typically shallow, ranging from two to six feet below ground surface. Permeability is variable, but is typically quite rapid. Runoff is characterized as being slow with only a slight hazard of erosion.

The onshore pipeline route is adjacent to Laguna Channel for a short distance on the northwest portion of the El Estero WWTP (refer to Figure 1-1). The channel is identified as an area of active erosion where gullying and sedimentation are active during winter months (Hoover, 1978).

The proposed desalination facility site and the pump station/chemical treatment area site were originally wetlands that were reportedly filled with debris from the 1925 earthquake and subsequently excavated in the upper layer, filled, and recompacted by the City. The City installed drain pipes in the past to drain the historical wetlands in the project area.

According to the City of Santa Barbara Seismic Safety/Safety Element, the project facilities are not located in an area identified as having expansive soils or undergoing creep; however, the site facilities are located in an area identified as having a high liquefaction susceptibility (Hoover, 1978). However, site specific geotechnical investigations performed prior to the construction of the adjacent Wastewater Reclamation Plant at the El Estero Wastewater Treatment Plant, located on the southerly portion of the overall WWTP site, indicated a low potential for liquefaction. No special foundation designs were considered necessary at that site to mitigate potential damage due to liquefaction (Staal, Gardner, & Dunne, 1987).

Refer to Section 3.3.1.1 for information on surface water and shallow groundwater conditions.

3.2.1.2 Geology.

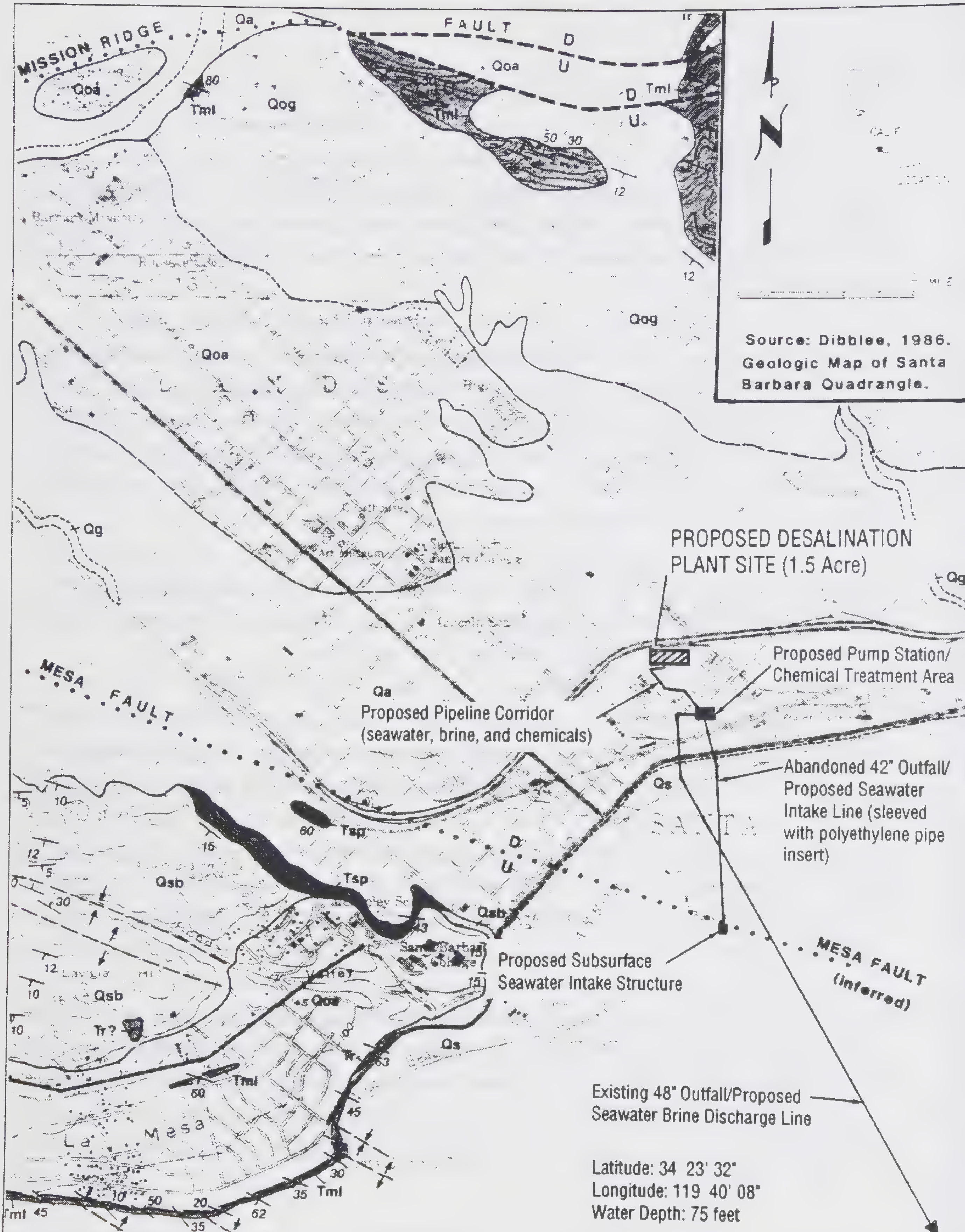
Regional Geology. The City of Santa Barbara and environs are located in the western end of the Transverse Range geomorphic province of California. The south portion of the City and the subject property are located on a narrow alluvial plain situated between the Santa Ynez Mountains (to the north) and the Santa Barbara Channel (to the south). The regional geology of the project area is shown on Figure 3.2-1.

Underlying the site vicinity are Holocene estuarine deposits comprised of unconsolidated sand, silt, and clay. Underlying these deposits are a series of older marine, alluvium, and non-marine terrace deposits of Late Pleistocene age. Below this lies the semi-consolidated marine Santa Barbara Formation (E. Pleistocene to L. Pliocene) consisting of sand, gravel, silt, and clay. A variety of published sources indicate that the combined thickness of these unconsolidated and semi-consolidated sediments is estimated to range from 1000 to 2000 feet.

The Santa Barbara Formation rests with angular unconformity on consolidated shales of the Monterey Formation. The Monterey Formation was deposited during Late Miocene to Late Cretaceous and has an estimated thickness of at least 20,000 feet.

Regional Structure and Tectonics. Structurally, the City of Santa Barbara is located on the north flank of a structurally complex synclinorium (folded rock structure which dips inward from opposite sides towards a fold axis); the axis of the synclinorium lies in the Santa Barbara Channel (GTC, 1973). Several major faults dissect the synclinorium, the most significant being the Red Mountain Thrust. The Red Mountain thrust fault is assumed to intersect the Channel bottom approximately two and one-half miles offshore, south of the City. The thrust fault dips northward at an approximate angle of 45 degrees and presumably passes under the site at an approximate depth of three miles.

Recent investigations conducted for the National Science Foundation indicate that the Channel Islands are moving towards the Santa Barbara coastline at a rate of approximately 1 centimeter per year (Santa Barbara News-Press, 7/2/90). Scientists state that "we now know that the Channel will be the source of earthquakes in the future", but the magnitude and timing of future earthquakes are unknown.



Project No. 906B140A	Santa Barbara Emergency Water Supply Project	Figure 3.2-1. GEOLOGIC MAP OF PROPOSED DESALINATION PROJECT AREA
Woodward-Clyde Consultants		

Regional Seismicity and Historic Activity. The City of Santa Barbara has experienced damage from several earthquakes in historic time, starting in 1805 when a large earthquake resulted in damage to the Santa Barbara Mission. The City of Santa Barbara and proposed desalination project facility sites are located in a seismically active area, as is much of coastal California. A summary of the City's seismic history follows, based on information contained in the City of Santa Barbara Seismic Safety/Safety Element (1979) and other published sources.

In 1812, Santa Barbara was severely shaken by an earthquake of 7.5 (?) magnitude with an epicenter located in the Channel. Tsunamis of up to 50 feet high were reported. In 1857, the Fort Tejon earthquake (8.0+ magnitude) occurred, reportedly the most severe earthquake to originate in the Transverse Ranges in recorded history. The earthquake was felt strongly in Santa Barbara and resulted in severe damage to the Mission (Norris and Webb, 1990). During the period from 1857 to 1925, approximately 37 moderate tremors were felt.

On June 29, 1925, a major earthquake struck Santa Barbara, having an estimated magnitude of 6.3 and an epicenter located somewhere in the Santa Barbara Channel. This quake resulted in major property loss and the death of 13 people. "The most severe damage to structures occurred (to properties located) along the beachfront and in the downtown areas that had been constructed over poorly consolidated artificial fill" (City of Santa Barbara Seismic Safety/Safety Element, 1979). In particular, "...820 feet of the sewer outfall pipe was found to be out of grade as much as 15 inches." This earthquake was followed by multiple aftershocks of varying strength for over a year.

In 1927, an earthquake (7.3+ magnitude) occurred near Point Arguello which resulted in a six foot tsunami in Santa Barbara. In 1941, a 5.9 magnitude earthquake centered in the Channel near Carpinteria caused damage in Santa Barbara. In 1952, a 7.7 magnitude earthquake centered on the White Wolf fault (Kern County) resulted in serious structural damage to buildings on State Street in Santa Barbara.

More recently, in 1968, Santa Barbara experienced an earthquake swarm centered in the east part of the Channel that resulted in some damage in the City. The swarm consisted of 63 shocks, 22 of which were felt in Santa Barbara. The most recent major earthquake to affect the City was in 1978, which resulted in an estimated $9.26 million damage. Most of the damage occurred at the

University of California; the rest occurred at Marina I in the Harbor and at the Municipal Airport. The Harbor is located approximately 5000 feet southwest of the proposed desalination plant site.

Local Faults and Associated Activity. According to the City of Santa Barbara Seismic Safety/Safety Element, there are eight onshore named faults in the City of Santa Barbara and multiple unnamed faults, especially in the Mission Ridge and Sycamore Canyon areas. The eight faults identified in the Seismic Safety/Safety Element are the Mesa, Mission Ridge, Lavigia, Lagoon, Sycamore, Montecito, Eucalyptus Hill, and More Ranch Faults. Of these, the More Ranch is considered active (using the California Division of Mines and Geology classification described below), the Mesa is considered either potentially active or active, and the rest are considered potentially active. The San Andreas is a historically active fault that has potential to impact the City, but which is not located within the City limits and is thus not included in the Seismic Safety/Safety Element.

The California Division of Mines and Geology classifies faults as follows: Historically active faults are those on which earthquakes have occurred during historic time (200 years); active faults are those that show evidence of displacement during the Holocene epoch (or during the last 11,000 years); and potentially active faults are those which displace Pleistocene age deposits (2-3 million years), but which do not displace Holocene deposits.

According to the Seismic Safety/Safety Element, the only active fault in the City of Santa Barbara is the More Ranch Fault. The More Ranch Fault is interpreted to be *en echelon* with the offshore Red Mountain thrust fault; since the Red Mountain is longer than the More Ranch fault, the Red Mountain was used in the Seismic Safety/Safety Element in determining a design earthquake.

Project Specific Faults and Seismicity. There are no fault traces currently identified within the onshore project area limits. The only fault within a mile radius of the project limits is the Mesa Fault, located approximately 3000 feet from the onshore project components. The Mesa Fault trends roughly southeast-northwest and is inferred to extend into the Channel somewhat south of Stearns Wharf; the inferred extension of the fault trace continues east, intersecting the end of Stearns Wharf, joining the Offshore Barrier Fault, and eventually joining the Rincon Creek Fault in Carpinteria (City of Santa Barbara Seismic Safety/Safety Element). Both of the offshore existing outfall pipelines (seawater intake and brine discharge pipelines) cross the inferred offshore extension of the Mesa Fault.

There have been no instrumentally recorded seismic events on the Mesa Fault. However, according to the City of Santa Barbara Seismic Safety/Safety Element, geologic data indicate that the north-dipping Red Mountain Fault (refer to Geology Section for discussion of this fault) and the Mesa/Rincon Creek Fault are believed to converge at depth and are thus structurally related; the 1925, 1941, and 1978 earthquakes occurred on an active offshore fault(s), probably the Red Mountain and/or Pitas Point Faults. Therefore, although the Mesa Fault is not expected to generate earthquake activity itself, it may experience movement sympathetically with a major earthquake event on the Red Mountain Thrust.

3.2.2 Environmental Impacts

The geologic, soil and physiographic environment of the project site could present potential hazards. The tolerance of the project equipment and structures to the hazards of general environmental or seismic effects is discussed below. This discussion is based on cone penetration tests at the specific project sites, geotechnical investigation of an adjacent site, review of available data and literature, and interpretations of topographic and geologic maps. A detailed geotechnical investigation of the project site has been completed and the report from that investigation will specify the requirements of final foundation and structure design in accordance with Seismic Zone IV and Uniform Building Code (UBC) requirements.

3.2.2.1 General Environmental Impacts.

Landslide. Both onshore and offshore components of the project facility are essentially flat and are surrounded by relatively flat topography. There is no potential for damage by landsliding.

Erosion. Due to the nearly flat landform of the proposed facility sites and pipeline routes, wind and water erosion of the surface, except at the beach, are expected to be minimal. Project facility locations, including pipeline routes where trucking will be required, will generally be covered with impervious surfaces which will preclude off-site erosion and siltation. Excavation, trenching, and insertion of the intake pipeline on the beach could result in minor, short-term erosion on the beach.

No export or import of soil to the desalination plant site is currently anticipated to be required. An estimated 3000 to 4000 cubic yards of soil would be worked during construction of the plant.

Onsite grading and compacting will occur to a depth of approximately 18 to 24 inches over the entire site. Minor loss of soil during earthwork activities may occur.

The pump station/chemical treatment facility will involve removal of approximately 800 cubic yards of material (for the proposed 10,000 AFY project) during construction of the four 40-foot deep shafts with pumps. Dewatering and approved soil and water disposal will be necessary. Minor loss of soil due to soil erosion may occur during excavation and construction of the facilities.

Insertion of the polyethylene pipe into the abandoned outfall pipe on the beach will involve excavation and stockpiling of an estimated 450 cubic yards or more of beach sand. The excavated sand will be backfilled and compacted subsequent to the pipeline insertion. This construction activity may result in minor erosion and loss (or redistribution) of beach sand.

High Groundwater. There are two aspects of high groundwater that result in potential environmental effects; one is the increased potential for liquefaction during an earthquake event; and the other is the problem it can create during construction. Potential construction related concerns are discussed in Section 3.3.1.2, while liquefaction concerns are discussed in Section 3.2.2.2.

3.2.2.2 Seismic Related Hazards. There are several potential hazards to the proposed project related to seismicity and earthquake activity. Potential hazards include ground displacement, ground shaking, liquefaction, and tsunami events.

Ground Displacement. Ground displacement, or surface rupture during faulting, is usually confined to a narrow zone adjacent to an active fault trace. The proposed onshore components of the project do not overlie a fault trace and are located approximately 3000 feet from the Mesa Fault, which is the nearest recognized potentially active fault; therefore, the possibility of ground surface rupture is considered to be low.

The proposed offshore pipeline components would cross the inferred extension of the Mesa Fault south and east of Stearns Wharf (refer to Figure 3.2-1). There is potential for movement and possibly rupture along both of the pipelines in the event of movement along the Mesa Fault. That fault is not known to be active, but the Red Mountain Thrust Fault is considered active and may trigger action on the Mesa Fault.

Ground Shaking. Damage from ground shaking, or strong ground motion, is caused by the transmission of earthquake vibrations through the ground and into the structure. The City of Santa Barbara and the proposed facility sites have undergone historic groundshaking on numerous occasions, as discussed previously. It can be assumed that, in the event of an earthquake, the project sites would be subjected to ground motions similar to those experienced in the past.

Liquefaction. The Santa Barbara Channel has been the epicenter for at least two major earthquake events, one in 1812 and the second in 1925, according to the Santa Barbara Seismic Safety/Safety Element. During these earthquakes, saturated soils amplified the groundshaking, especially in areas of poorly consolidated artificial fill such as the material underlying the onshore project facilities. "Movement of the unstable ground resulted in ground settlement of up to 10 inches" and "820 feet of the sewer out-fall pipe was found to be out of grade as much as 15 inches" (City of Santa Barbara Seismic Safety/Safety Element, 1979). The high groundwater and the composition of the soils underlying the onshore project components (the desalination plant, the pump station/chemical facility, and the pipeline routes) may result in a range of liquefaction potential from low to high.

Tsunami. In 1927, an earthquake off Point Arguello resulted in a tsunami that reached a height of about six feet in Santa Barbara. According to the City of Santa Barbara Seismic Safety /Safety Element, a ten-foot high wave with a wave run up to the 40 foot elevation contour should be considered maximum (City of Santa Barbara Seismic Safety/Safety Element, 1979). The proposed project site is within the potential extent of a tsunami and could thus presumably suffer damage should such an event occur. If such an event occurred, the entire waterfront area including the El Estero WWTP would likely incur flooding damage.

3.2.2.3. Potential Impacts to Project Equipment and Structures. There are no potential direct effects on project equipment due to landslide, erosion, or high groundwater.

Seismic related events, including ground displacement, groundshaking, liquefaction, and tsunami may be sufficient to cause settlement or dislocation of the equipment. Significant seismic activity will potentially cause the piping to break. Mitigation of these effects is discussed in the following section.

3.2.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no unavoidable adverse significant effects are predicted, the numbered mitigation measures presented below are recommended to further mitigate impacts.

The proposed desalination project components will be designed in accordance with good engineering practice and will consider the results of the project-specific geotechnical investigation. A discussion of recommended mitigations for general environmental impacts and geologic hazards follow.

3.2.3.1 Mitigation of General Environmental Effects. There are potential project impacts that could occur during construction due to soil erosion and high groundwater. Soil erosion may occur during earthwork for the desalination plant and the pump station/chemical treatment facility.

- 3.2-1: Standard siltation control measures including control of offsite drainage and runoff are required at the sites during construction to minimize impacts related to earthwork.

Where the pipeline corridor parallels the east side of Laguna Channel, construction activity will be as far removed from the Channel as possible, and will be completely within the El Estero WWTP boundaries.

- 3.2-2: Particular attention shall be given to avoiding disturbance of the banks of Laguna Channel by stipulating that construction workers and activities stay outside of flagged setback areas adjacent to the eastern side of Laguna Channel to avoid bank erosion and/or sedimentation.

Erosion of beach sands may occur during the excavation and stockpiling necessary to insert the polyethylene pipe into the abandoned outfall line. Assuming that standard erosion control measures are used at the site during construction, including covering exposed stockpiled sand, no adverse impacts related to earthwork will occur.

3.2.3.2 Mitigation of Seismic Related Hazards. Potential impacts to the proposed desalination plant and pumping station/chemical treatment facility and to human welfare could result should a significant (i.e., sufficient magnitude at project site to cause damage to facilities) earthquake occur. R1-1
Potential impacts include surface rupture along the Mesa Fault, ground shaking over the entire R1-2
project area, liquefaction under the onshore project components, and tsunami damage to the R9-29
onshore components.

Seismic hazards may have significant impacts on the project facilities including chemical storage areas and associated piping. However, the modular plant design using equipment and structures which are primarily skid or trailer mounted is inherently resistant to damage from settlement, dislocation or shaking. The primary and secondary filters, cartridge filters, product tanks, RO pump and electrical trailers and RO membrane system trailer will be designed to withstand seismic activity without significant damage. Interconnecting piping materials will be selected for maximum flexibility and tolerance for settlement.

Rupture of offshore pipelines could result if significant movement occurred on the inferred offshore extension of the Mesa Fault. The existing abandoned outfall line was in place during the 1925 earthquake and did not rupture. Use of the polyethylene sleeve as the intake line will provide a flexible and earthquake resistant conduit, even in the case of rupture of the external concrete pipe. Operating procedures will be prepared for the desalination facility outlining the procedures that would be used to deal with this type of rupture event; they will include shut off procedures for the pipelines and estimated timing and procedures for repair of the lines, including chemical lines. Secondary containment at all chemical storage areas will help protect against seismic related chemical releases.

The City of Santa Barbara is designated by Section 23 of the Uniform Building Code (UBC) as lying in Seismic Zone IV. The entire desalination project, including the desalination plant, the pump station/chemical treatment facility, and pipelines will be designed to meet minimum design standards in accordance with established City of Santa Barbara Building Department and UBC recommendations for Seismic Zone IV. The geotechnical report for the project, once finalized, will identify any additional mitigation measures and identify the specifications for final foundation and structure design, and the engineering design will be modified in accordance with these criteria. The geotechnical report will include a soils report identifying liquefaction potential for the site.

Assuming that all recommendations and concerns identified in the Geotechnical Study are addressed, and that the construction is in accordance with applicable codes, the risks associated with groundshaking and liquefaction would be considered to be less than significant.

- 3.2-3: The proposed project facilities shall be designed in accordance with the recommendations in the Geotechnical Study as well as for Seismic Zone IV recommendations in the UBC.

Due to the low frequency of occurrence of tsunamis in Santa Barbara, this geologic related hazard is not considered to be of significant concern. However, since the project site is within potential tsunami range, permanent staff located at the project should be familiar with the warning and evacuation procedures as outlined in the City of Santa Barbara Natural Disaster Plan and Disaster Contingency Plan.

In conclusion, no significant residual effects to geology and/or soils will occur. Assuming that the recommendations in the geologic/geotechnical report for the project are followed and that project facilities are designed in accordance with good engineering practice and in compliance with UBC recommendations for Seismic Zone IV, risk to project facilities from geologic hazards are considered less than significant.

3.3 WATER RESOURCES

3.3.1 Onshore Hydrology and Water Quality

3.3.1.1 Environmental Setting. This assessment of hydrology and water quality addresses aspects of the proposed desalination project that have the potential to affect surface or groundwater hydrology and/or water quality and the potential for flooding of project facilities. In general, the proposed desalination project would involve relatively minor surface disturbance in the vicinity of onshore surface water bodies. The only surface water body in the vicinity of the proposed desalination project facilities is Laguna Channel which is located approximately 375 feet to the west of the proposed desalination facility site. Laguna Channel is designed to carry runoff, including flood flows, to the Pacific Ocean. Laguna Channel is characterized much of the time by stagnant water due to lack of surface water runoff and input. A short section of the proposed pipeline

corridor between the pump station/chemical treatment area and the desalination facility parallels the east side of Laguna Channel.

The proposed desalination plant site is relatively flat, but it does slope gently to the north. Drainage of the site is by intermittent flow to the north where runoff collects in an existing storm drain which then flows to the west into Laguna Channel. The storm drain system was designed by the City to handle runoff from the site and would continue to be used if the desalination facility is constructed.

The proposed pump station/chemical treatment area site currently drains to the north-northwest towards and then along the west side of the existing commercial warehouse building which is located east of the El Estero WWTP. Site specific building plans, including contour maps, grading plans, drainage plans etc., will be prepared and approved (by the City) prior to actual construction of project facilities.

Groundwater is present at a depth of approximately 7.5 feet at the desalination plant site and at approximately 8 feet at the pump station/chemical treatment area as of November 1990. Reports from construction of nearby structures indicate that groundwater levels fluctuate seasonally depending on the amount of rain; levels may vary from ground surface to approximately 10 to 15 feet in depth.

The Flood Insurance Study performed for the Federal Emergency Management Agency (FEMA) indicates that the general site vicinity is located within the "Central Drainage Area," a highly urbanized area located between Mission and Sycamore Creeks that is frequently flooded. According to FEMA maps, the desalination plant is not located within a 100 year flood zone; however, the pumping station and chemical facility are located on the margin of the 100 year flood plain. In addition, Laguna Channel is designated within the 100 year flood plain and thus the proposed pipelines located near the channel are on the border of the flood plain.

The proposed onshore pipelines would carry the following liquids: 1) seawater intake and brine discharge; 2) chlorine in water solution; 3) ~~sulfur dioxide in water solution~~; 4) ferric chloride in water solution; 5) sodium hydroxide; and 6) carbon dioxide. The proposed chemical pipelines would be about 1 inch in diameter and constructed of polyethylene, sleeved inside an outer line (secondary containment line), and buried along with the larger seawater intake and brine discharge lines.

There are multiple similar lines buried throughout the adjacent El Estero Wastewater Treatment Plant.

3.3.1.2 Environmental Impacts. The Flood Insurance Study performed for FEMA characterizes flooding in the "Central Drainage Area" as typical of the majority of streams in southern California. High-intensity rains generally result in rapidly increased runoff, especially in combination with impervious soil types, denudation by fire, and steep channel gradients. The Study indicates that "various historic sources disclose that large-magnitude floods have swept Santa Barbara on 16 occasions since 1862, causing considerable damage to life and property." The storm drain located north of the proposed desalination plant is designed to be capable of handling runoff from a 100 year flood event. Portions of the project site may undergo damage during a 100 year flood event.

Potential soil erosion is discussed in Section 3.2 (Geology and Soils). Construction and operation of the proposed desalination project is not expected to result in significant erosion or associated sedimentation and surface water quality impacts. Precipitation during site grading operations could result in some sediment input to Laguna Channel via the existing storm drain system. Once the project is constructed, most areas will be covered with impervious materials (e.g., pavement, gravel, or structures) that will preclude erosion and associated sedimentation.

Construction of the proposed pump station will involve installation of four, 40-foot deep shafts for the intake booster pumps. Dewatering of groundwater may be required and it is possible that groundwater levels would need to be temporarily drawn down to allow construction and that localized groundwater gradients could be temporarily affected. Dewatering may also potentially be required at the excavation area for seawater intake pipeline installation on the beach.

The pipelines carrying the incoming seawater, discharge brine, and various chemicals in water solution may be subject to accidental rupture. A rupture of the inner and outer chemical pipelines could result in contamination of surface water in the adjacent Laguna Channel as well as groundwater resources underlying the pipeline route. The secondary containment line within which all chemical lines would be sleeved, as well as the constant monitoring at the desalination plant control room, would be expected to lessen the probability of an accidental chemical pipeline release to the environment. Refer to Section 3.6 (Risk of Upset) for more information. In addition, potential leakage from chemical storage tanks, including refilling operations, at the chemical treatment area and at the desalination plant site will be contained in a secondary containment

structure with capacity to hold 110 percent of the maximum tank capacities. Adherence to procedures outlined by regulations, including the Uniform Building Code and Article 80 of the Uniform Fire Code, will reduce the possibility of the occurrence of such accidents.

3.3.1.3 Mitigation Measures. The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no unavoidable adverse significant effects are predicted, the numbered mitigation measures presented below are recommended to further mitigate impacts.

- 3.3-1: The desalination plant and facilities shall be designed to withstand reasonable flood flows in accordance with City criteria.

- 3.3-2: Appropriate emergency plans shall be developed to temporarily shut down the desalination plant and associated facilities in the event of a flood or similar emergency.

- 3.3-3: Sediment control measures shall be implemented, as necessary, during site preparation activities if runoff is occurring. Measures to be implemented, as warranted by conditions, include control of offsite drainage and filtering of drainage using hay bales, sediment traps, or other means.

The pipelines carrying the seawater intake feedwater, brine discharge, and chemical feed lines will be designed in accordance with existing applicable codes and regulations, including appropriate safety measures, in order to reduce the likelihood of an accidental chemical release and/or localized flooding event (e.g., due to break of seawater intake line or brine discharge line).

The construction of four, 40-foot-deep shafts with pumps at the proposed pumping station may require dewatering during construction. An assessment of the potential for inducing flow of potentially contaminated groundwater into the project area may be warranted depending on the expected pumping rate and the known location of contaminated groundwater. If contaminated groundwater is encountered, it will be disposed of in an approved manner based on the results of laboratory analysis of water samples and regulatory agency (e.g., Regional Water Quality Control Board) approvals.

- 3.3-4: Once estimates of dewatering requirements are available, appropriate handling and discharge plans shall be developed (if applicable), including consideration of water quality and quantities.

3.3.2 Oceanography and Marine Water Quality

The information on marine water resources presented herein concentrates on environmental conditions related to the assessment of impact for the proposed brine discharge and the seawater intake.

3.3.2.1 Environmental Setting. Waste brine from the desalination project will be discharged to the Santa Barbara Channel through the City's existing outfall from the El Estero Wastewater Treatment Plant (WWTP). The outfall is 48 inches (1.22 m) in diameter and extends approximately 8,700 feet offshore and terminates at a depth of about 75 feet (22.9 m). Wastewater is dispersed through a terminal diffuser 48 inches (1.22 m) in diameter, with 60 ports ranging from 8.9 to 10.2 cm in diameter and spaced at 3.66 m intervals over a length of 700 feet. The discharge flow rate per port ranges from 0.0068 to 0.0093 m^3/sec.

Wastewater discharged through the outfall is dispersed by ocean currents. Water circulation in the Santa Barbara Channel is dominated by the Southern California Eddy, with several distinct seasonal patterns. Upwelling and countercurrents are common. Water circulation (particularly upwelling) affects temperature, nutrients, and turbidity in the Santa Barbara Channel and, therefore, the abundance and diversity of marine organisms. Other important influences in nearshore waters include treated wastewater effluent discharge and runoff from urban areas. Wastewater discharge from Santa Barbara was reported to increase local turbidity in the nearshore areas south of Stearns Wharf in the mid-1970's. However, completion of a new treatment plant in 1975 with a longer outfall and improved diffuser has apparently eliminated nearshore turbidity allegedly caused by the wastewater effluent.

The data used in the overview presented in this section has been derived primarily from reports prepared by ECOMAR, Inc. (1984a, 1984b, 1985, 1986, 1988, 1989), by Oceanographic Services, Inc. (1976, 1978), by Brown and Caldwell, Inc. (1982), and the Phase I Technical Report and Preliminary Environmental Analysis for the City of Santa Barbara Emergency Water Supply Project prepared by Woodward-Clyde Consultants and EIP Associates for the City of Santa Barbara in July, 1990.

A portion of the ECOMAR, Inc. reports were prepared for the City of Santa Barbara National Pollutant Discharge Elimination System (NPDES) permit for the sewage outfall discharge from the El Estero WWTP. The monitoring and sampling program was designed and approved on March 25, 1987 by the California Regional Water Control Board, Central Coast Region. As part of this program, four stations were sampled quarterly (January, April, July, October) from 1988 to 1989. Samples from the seawater column were analyzed for temperature, light transmittance, natural light attenuation, dissolved oxygen, pH, ammonia, total and fecal coliform bacteria, and suspended solids. Samples were obtained at the surface, in the wastewater plume, and three meters above the sea bottom at each of the stations shown on Figure 3.3-1. These stations are:

- WC-ZID: 25 meters from the outfall in the wastewater plume;
- WC-100M: In the plume, 100 meters from the outfall on the same heading as above; and
- WC-250M: In the plume, 250 meters from the outfall on the same heading as above.

The locations of these sampling stations, as plotted in the source document, do not correspond to the actual termination point of the outfall.

The 1978 report, prepared by Oceanographic Services, Inc. for the City of Santa Barbara in connection with the wastewater outfall used by the El Estero WWTP, provides the following overview of oceanographic conditions in this area:

> "The near shore marine environment, where the Santa Barbara study took place, is a dynamic area in a state of continual change naturally. Natural perturbations usually are cyclic (daily, seasonal, annual, or longer), though they can be episodic (e.g., storms and tsunamis) and not part of any cycle. Such alterations of ambient conditions are most evident in the environment's physical characteristics, such as water depth, clarity, temperature and salinity; currents; substrate type; and sediment transport. Severe or prolonged changes in these parameters eventually affect biological communities in terms of the abundance and diversity of species beyond their own limits of natural variation".

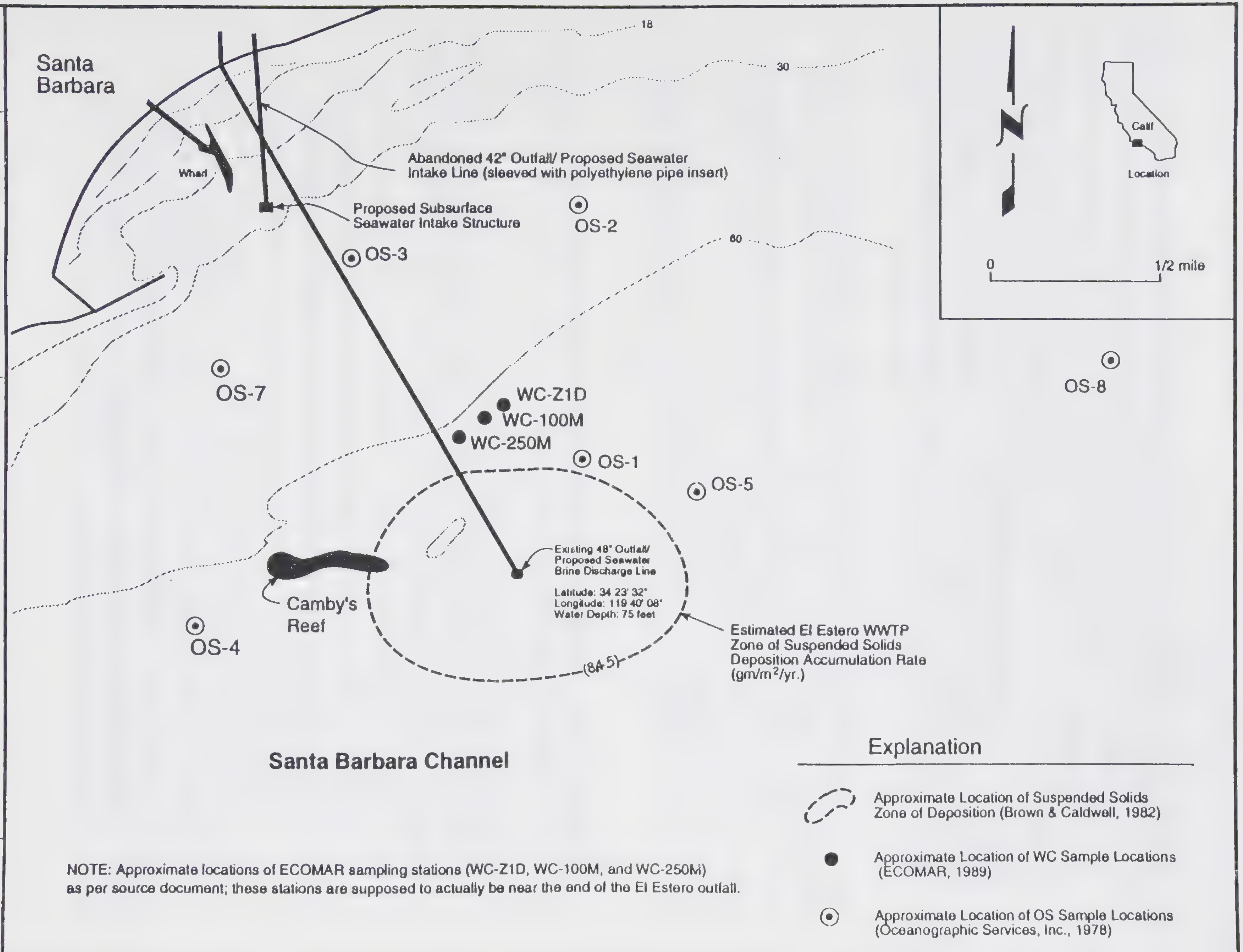


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Figure 3.3-1. OFFSHORE SAMPLING STATIONS, SUSPENDED SOLIDS DEPOSITION, AND CAMBY'S REEF

Woodward-Clyde Consultants

The chemical oceanography in the waters surrounding the project area is largely, but not exclusively, controlled by physical oceanographic conditions. Seasonal and periodic fluctuations in the populations of planktonic organisms such as zooplankton and phytoplankton can also result in significant changes in certain important chemical parameters in seawater. Variability in seawater chemistry is interdependent with the variability in ocean currents and in patterns of water movement. Important chemical and physical parameters in the ocean such as salinity, seawater density, turbidity, dissolved oxygen, temperature, nutrient concentrations, and the concentrations of several heavy metals are significantly affected by the regional and local water movement.

3.3.2.1.1 Physical Oceanography.

Background on Ocean Currents. The project area is characterized by substantial variability in ocean currents. Current pattern data have been developed as part of the plume sampling and monitoring program which is required by the Regional Water Quality Control Board for the El Estero WWTP discharge. These data were required for the City of Santa Barbara NPDES permit to evaluate the potential effects of the City's wastewater plume on the receiving ocean waters, particularly on shellfish mariculture areas upcoast from the City's ocean outfall. Data were collected by means of twelve bimonthly (approximately) samplings performed by ECOMAR, Inc. during 1987-88.

Offshore Circulation Pattern. The oceanic water mass adjacent to the southern California coast is primarily affected by the waters transported south by the California Current, which is modified by a countercurrent (Davidson Current) and upwelling. The California Current flows southward along the coast of California and is relatively close to the coast north of Point Conception, approximately 75 km west of Santa Barbara. At Point Conception, the coastline has an abrupt change to an east-west orientation and the flow of water departs the coastline. South of Tanner and Cortez Banks the main portion of the California Current curls toward land and separates into two branches. The first is the Southern California Countercurrent which turns back to the north between Santa Catalina Island and the Tanner-Cortez area and flows northwest between the Channel Islands and the mainland. The second branch is composed of a clockwise eddy near the coast of Santa Barbara. Along the coast, surface circulation is complicated by predominantly northerly flow eddies formed just east of Santa Barbara and the Channel Islands (Brown and Caldwell, 1982).

During winter (November to February), thermal stratification and, consequently, density stratification, is greatly reduced due to decreased insolation (i.e., amount of solar radiation received) and mixing caused by storms. During this period, the Davidson Current, normally below a depth of 200 m, surfaces. Although the California Current is present throughout the year, it is modified by upwelling and the Davidson current during certain times of the year. Upwelling is prevalent along the offshore areas of the California coast generally from March through July (Brown and Caldwell, 1982).

In addition to the aforementioned currents, ocean circulation patterns in the Santa Barbara area are also influenced by tidal currents and wind-induced currents.

Currents in the Vicinity of El Estero Outfall. Currents in the vicinity of the City of Santa Barbara outfall have been irregularly recorded by in situ recording current meters and by free drifting drogues (i.e., sea anchors). In one study cited by Brown and Caldwell (1982), current flow during any one survey was either east or west and ranged in speed from 0 to 40 cm/sec. The predominant current directions were roughly parallel to the coast with surface drogues travelling to the east during six of the eleven surveys and drogues traveling to the west or northwest during the remaining five drogue surveys.

Changes in flow direction relating to the tide cycle were noted during all surveys. Usually these appeared as a north-south movement of drogues, but sometimes the drogues just slowed their eastward or westward motion. During one study in February 1976, which lasted 24 hours, four changes in flow direction were noted. Each change was nearly a completed reversal which corresponded closely with the change in tide stage (Brown and Caldwell, 1982).

Data on ocean currents has also been generated by ECOMAR, Inc. by means of an in situ current meter. Measurements indicated currents flowed upcoast (westerly) in a majority of the observations. However all of the forty-eight hour segments analyzed had one or more flow reversal to downcoast (easterly) flows. Some of these reversals were of significant duration (twelve or more hours). Two of the forty-eight hour intervals analyzed indicated a preponderance of downcoast flows (ECOMAR, 1989). Generally, particular sets of oceanographic conditions favor more concentrated plume transport for longer distances

downcurrent. Swift current flow and strong thermal stratification (thermocline) have also been suggested by ECOMAR, Inc. to occur occasionally in the vicinity of the ocean outfall. The most probable time of the year for the simultaneous occurrence of these conditions is generally summer and fall months (ECOMAR, 1988).

Numerous observations of current discontinuities, in terms of direction and speed, within the area were recorded during the field samplings. These usually consisted of progressive changes in flow direction from station to station throughout the duration of the field sampling. Vertical discontinuities were also noted between the surface and sampling depths (-40 feet) on many occasions. These reversals were not always associated with water column stratification or strong surface wind shear (ECOMAR, 1989). The variability found in currents can be at least partly caused by episodic events such as upwelling, eddies and gyres (i.e., circular or spiral motion), and periodic events such as tides.

Tides. Tides along the California coast are of the ordinary mixed type, where two unequal high tides and two unequal low tides normally occur during a 24-hour period.

Seawater Density. The density of seawater is governed by the combined effects of temperature, salinity and, to a small extent, pressure in the water column. Seawater density ranges from 1.02 to 1.03 g/cm^3 in the open ocean. Typical density profiles in the open ocean show less dense water overlying more dense water with little density change past 1,000 to 2,000 meters. Density in coastal regions and embayments, affected by various forms of coastal runoff and mixing, can be highly variable (ECOMAR, 1986, 1988).

3.3.2.1.2 Chemical Oceanography.

Salinity. At least 74 of the 89 elements occurring in nature have been identified to be present in seawater. Of these, 74 identifiable elements contribute to the salinity of seawater. Cations (species with positive atomic charges) such as sodium, potassium, magnesium and calcium; and anions (species and molecules with negative charges) such as chloride, sulfate and bicarbonate comprise the majority of salts in seawater (ECOMAR, 1986). Eleven elements or their ions make up 99.7 percent of the total material dissolved in the sea. These elements are known as the major constituents.

Salinity measurements at two stations one mile from shore in Santa Barbara Channel water (see Figure 3.3-1) were performed by ECOMAR, Inc. Salinity was found to be rather constant (33.3 to 33.5 ppt; parts per thousand) regardless of depth and station (ECOMAR, 1986, 1988).

Temperature. Temperature is of major importance as a seawater characteristic, influencing density, productivity, and dispersion properties of a particular water mass. Vertical temperature profiles in continental shelf areas can be highly variable but often consist of an isothermic surface layer, a zone of rapid temperature decline with depth, and an underlying thick layer of deep water exhibiting a slower decrease in temperature decline with depth, and, finally, an underlying thick layer of deep water exhibiting a slower decrease in temperature with increased depth. The area of rapid temperature change with depth is termed a thermocline (ECOMAR 1986, 1988).

Seawater temperatures varied with season and depth in the stations sampled by ECOMAR, Inc. For example, during summer (August 11-12, 1988), temperature ranged from a maximum of 17° C in surface waters to a minimum of 12.5-14° C at a depth of 24 m. Seawater temperature across the same depth gradient was fairly constant (13-13.5° C) during winter (December 3, 1988).

Dissolved Oxygen and Biochemical Oxygen Demand (BOD). The solubility and concentration of dissolved oxygen in seawater is determined by many factors. Temperature and salinity have the strongest influence on oxygen solubility; photosynthetic and respiratory processes in marine organisms also determine dissolved oxygen concentrations. Open ocean waters are usually saturated with oxygen (8 to 10 mg/l). In coastal waters, dissolved oxygen values are more variable, with concentrations as high as 10 to 14 mg/l. Concentrations such as these are found in nutrient rich waters with a high degree of primary productivity. Low dissolved oxygen concentrations may occur in areas with large chemical and/or biological dissolved oxygen demand such as might be found in stagnant embayments in water affected by various forms of eutrophication (ECOMAR, 1986, 1988).

The addition of dissolved organic matter to a marine ecosystem results in an increase in the activity of decomposers, organisms that use organic materials as sources of energy and nutrients. The oxygen-depleting strength of organic matter is a rather precise parameter

called biochemical oxygen demand (BOD). BOD is an expression of how much oxygen is needed for bacteria to oxidize organic matter present in seawater (Kupchella and Hyland, 1989). In the extreme, large amounts of organic matter could result in a near-absolute depletion of oxygen in seawater. Fish and plankton die under such circumstances.

pH Level. Hydrogen ion concentration is measured as pH and calculated as -log $[H^+]$. This measurement serves as an indicator of the degree of acidity or alkalinity of a solution. Seawater is alkaline with cations outnumbering "strong" anions 2:1 resulting in a solution with a normal pH range of 7.8 to 8.3. Seawater has a strong buffering capacity due to the carbon dioxide, carbonate and bicarbonate equilibrium. Variation in pH in seawater is primarily determined by carbonate ions. This balance can be changed by the photosynthetic activity of plants (phytoplankton and macroalgae) which due to their removal of carbon dioxide can shift the pH to values as high as 9.6. The decomposition and respiration of these organisms can also reduce pH to values as low as 7.0 (ECOMAR, 1986, 1988).

The ECOMAR seasonal sampling indicated that the waters surrounding the project area are characterized by a relatively constant pH regardless of season, depth and station. pH values ranged from 8.3 to 8.4.

Human-related (anthropogenic) activities, although limited, are a source of certain pollutants in this region. Several oil production platforms are located in the Santa Barbara Basin; their effect on water quality near the project site is unknown but probably negligible. No major river outfalls affect the region.

3.3.2.2 Environmental Impacts.

3.3.2.2.1 Oceanography and Marine Water Quality. The Initial Study issued by the City of Santa Barbara for the proposed project and the comments received on the Notice of Preparation identified the following areas as being of potential concern in relation to oceanography and marine water quality: 1) possible effects of brine discharge from effluent in relation to seawater quality parameters such as temperature, dissolved oxygen or salinity; 2) possible localized changes in currents or in turbidity, due to the presence of intake pipes on the ocean bottom or due to the pumping/discharge of effluents from the desalination plant; 3) possible changes in dispersion of sewage plume effluent due to added discharge of brine effluent from the desalination plant; 4) the

potential for the impingements of plumes from the local sewage discharge into the seawater intake pipeline.

The Regional Water Quality Control Board, Central Coast Region (RWQCB) has legal authority to monitor and protect the ocean waters receiving waste discharges in the Santa Barbara area. Preliminary computer modelling studies conducted by this agency have indicated that the brine discharge from the desalination plant is not expected to adversely affect the dilution of wastewater in the coastal waters off Santa Barbara (Meece, 1990).

Liquid waste originates from the following: 1) filter backwash; 2) desalting reject (brine); and 3) periodic process cleaning or maintenance procedures such as pipeline flushing or membrane cleaning.

The effluents from the desalting process which are considered waste products will be suitably conditioned by three processes before they leave the plant site for disposal. Seawater brine will flow directly to the El Estero WWTP outfall. Wastewater generated when membranes are chemically cleaned (3 - 4 times per year) will be discharged for treatment by the El Estero WWTP. This process will be regulated by the City through the issuance of an Industrial Wastewater Discharge Permit in accordance with the provisions of Santa Barbara Municipal Code Title 16. Solids will be removed by truck to a qualified solids disposal site. Solids taken to Tajiguas landfill are required to have a moisture content of less than 50 percent. Therefore, solids from the desalination plant will need to meet this criteria prior to disposal if Tajiguas (closest to site) is selected as the disposal location. None of the normal operation or maintenance streams are expected to be considered hazardous materials.

Under normal operating conditions, solid wastes are marine residues from the intake pipe cleaning, sand, coagulant, and other particles removed by the filters, and cartridges from the cartridge filters. Filter backwash solids are produced as a regular process waste and their quantity is dependent on conditions at the seawater intake. Their removal by truck will be a regular plant operation; expected quantities will require 1-2 trucks per week.

Marine residue and filter cartridge disposal will be required infrequently; pipeline cleaning will be a monthly or bi-monthly operation and filter cartridges are expected to be changed 3-4 times per year. Tables 3.3-1 through 3.3-6 show the expected values of various constituents present in the

Table 3.3-1. PROJECTED COMBINED EL ESTERO/BRINE DISCHARGE - BACKWASH WATER QUALITY (9.0 MMGPD/13.35 MMGPD)[a]

Parameter	Incoming Seawater[b]	Brine Discharge[c]	Filter Backwash[c]	Combined Brine/ Backwash	El Estero Annual Maximums[d]	Projected Combined Effluent	Existing El Estero Waste Discharge Limitations[e]
Flow (MMGPD)	21.2	11.66	1.696	13.35	9.0	22.35	11.0
Arsenic (mg/l)	ND	0.0	0.0	0.0	0.016	0.006	0.610
Cadmium (mg/l)	0.04	0.0728	0.04	0.069	0.01	0.045	0.120
Chromium (mg/l)	0.06	0.1092	0.06	0.103	0.01	0.066	0.240
Copper (mg/l)	0.06	0.1092	0.06	0.103	0.02	0.070	0.120
Cyanide (mg/l)	NA	--	--	--	0.092	0.037[f]	0.610
Lead (mg/l)	0.005[g]	0.0091	0.005[g]	0.009	0.011	0.009	0.240
Mercury (mg/l)	0.0009	0.001638	0.0009	0.002	0.0004	0.001	0.0048
Nickel (mg/l)	ND	0.0	0.0	0.0	0.080	0.032	0.610
Silver (mg/l)	0.03	0.546	0.03	0.051	0.060	0.055	0.0655
Zinc (mg/l)	0.12	0.2184	0.12	0.206	0.110	0.167	1.46
Ammonia (mg/l)	NA	--	--	--	25.6	10.307[f]	72.6
Selenium (mg/l)	ND	0.0	0.0	0.0	0.014	0.006	--
Thallium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Antimony (mg/l)	0.78	1.4196	0.78	1.338	NA	0.8[h]	--
Beryllium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Low TSS (ppm)	10[g]	0.0	112.0[g]	14.23	13.0	13.73	--
High TSS (ppm)	50[g]	0.0	336.0[g]	42.68	13.0	30.73	--
pH	8.2	6.5-7.5	6.5-7.5	6.5-7.5	7.53-7.8	6.5-7.8[i]	6.0-9.0

NA = not analyzed; ND = not detected; -- = not applicable or not available.

[a] 9.0 million gallons per day (MMGPD) is the reported discharge during the daytime for the El Estero Wastewater Treatment Facility prior to the drought; 13.35 MMGPD is the calculated combined maximum brine/backwash rate for the proposed 10,000 AFY desalination project.

[b] Woodward-Clyde Consultants (1990), unless noted otherwise.

[c] Values based on numbers provided by Ionics and/or concentration factor of 1.82 for brine discharge and 1.0 for filter backwash.

[d] Source: Annual Report (1988) for El Estero WWTP (Summary of Analytical Results on Secondary Effluent, Monthly Average Table).

[e] Source: California RWQCB Waste Discharge Requirements for El Estero WWTP (Order No. 89-63); values listed are 6-month medians.

[f] Not including contribution from desalination brine/backwash discharge which is not available (seawater feed analyses not performed).

[g] Source: Ionics, 1990.

[h] Not including contribution from El Estero WWTP which is not available (i.e., not analyzed).

[i] Not calculated; range encompasses upper and lower values for desalination plant and El Estero discharges.

Table 3.3-2. PROJECTED COMBINED EL ESTERO/BRINE DISCHARGE - BACKWASH WATER QUALITY (1.0 MMGPD/13.35 MMGPD)[a]

Parameter	Incoming Seawater[b]	Brine Discharge[c]	Filter Backwash[c]	Combined Brine/ Backwash	El Estero Annual Maximums[d]	Projected Combined Effluent	Existing El Estero Waste Discharge Limitations[e]
Flow (MMGPD)	21.2	11.66	1.696	13.35	1.0	14.35	11.0
Arsenic (mg/l)	ND	0.0	0.0	0.0	0.016	0.001	0.610
Cadmium (mg/l)	0.04	0.0728	0.04	0.069	0.01	0.065	0.120
Chromium (mg/l)	0.06	0.1092	0.06	0.103	0.01	0.096	0.240
Copper (mg/l)	0.06	0.1092	0.06	0.103	0.02	0.097	0.120
Cyanide (mg/l)	NA	--	--	--	0.092	0.006[f]	0.610
Lead (mg/l)	0.005[g]	0.0091	0.005[g]	0.009	0.011	0.010	0.240
Mercury (mg/l)	0.0009	0.001638	0.0009	0.002	0.0004	0.001	0.0048
Nickel (mg/l)	ND	0.0	0.0	0.0	0.080	0.006	0.610
Silver (mg/l)	0.03	0.546	0.03	0.051	0.060	0.052	0.0655
Zinc (mg/l)	0.12	0.2184	0.12	0.206	0.110	0.199	1.46
Ammonia (mg/l)	NA	--	--	--	25.6	1.783[f]	72.6
Selenium (mg/l)	ND	0.0	0.0	0.0	0.014	0.001	--
Thallium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Antimony (mg/l)	0.78	1.4196	0.78	1.338	NA	1.245[h]	--
Beryllium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Low TSS (ppm)	10[g]	0.0	112.0[g]	14.23	13.0	14.14	--
High TSS (ppm)	50[g]	0.0	336.0[g]	42.68	13.0	40.61	--
pH	8.2	6.5-7.5	6.5-7.5	6.5-7.5	7.53-7.8	6.5-7.8[i]	6.0-9.0

NA = not analyzed; ND = not detected; -- = not applicable or not available.

[a] 1.0 million gallons per day (MMGPD) is the reported typical low flow discharge at nighttime for the El Estero Wastewater Treatment Facility; 13.35 MMGPD is the calculated maximum brine/backwash discharge rate for the proposed 10,000 AFY desalination project.

[b] Woodward-Clyde Consultants (1990), unless noted otherwise.

[c] Values based on numbers provided by Ionics and/or concentration factor of 1.82 for brine discharge and 1.0 for filter backwash.

[d] Source: Annual Report (1988) for El Estero WWTP (Summary of Analytical Results on Secondary Effluent, Monthly Average Table).

[e] Source: California RWQCB Waste Discharge Requirements for El Estero WWTP (Order No. 89-63); values listed are 6-month medians.

[f] Not including contribution from desalination brine/backwash discharge which is not available (seawater feed analyses not performed).

[g] Source: Ionics, 1990.

[h] Not including contribution from El Estero WWTP which is not available (i.e., not analyzed).

[i] Not calculated; range encompasses upper and lower values for desalination plant and El Estero discharges.

Table 3.3-3. PROJECTED COMBINED EL ESTERO/BRINE DISCHARGE - BACKWASH WATER QUALITY (9.0 MMGPD/10.44 MMGPD)[a]

Parameter	Incoming Seawater[b]	Brine Discharge[c]	Filter Backwash[c]	Combined Brine/ Backwash	El Estero Annual Maximums[d]	Projected Combined Effluent	Existing El Estero Waste Discharge Limitations[e]
Flow (MMGPD)	15.9	8.74	1.696	10.44	9.0	19.44	11.0
Arsenic (mg/l)	ND	0.0	0.0	0.0	0.016	0.007	0.610
Cadmium (mg/l)	0.04	0.0728	0.04	0.067	0.01	0.041	0.120
Chromium (mg/l)	0.06	0.1092	0.06	0.101	0.01	0.059	0.240
Copper (mg/l)	0.06	0.1092	0.06	0.101	0.02	0.064	0.120
Cyanide (mg/l)	NA	--	--	--	0.092	0.043[f]	0.610
Lead (mg/l)	0.005[g]	0.0091	0.005[g]	0.008	0.011	0.010	0.240
Mercury (mg/l)	0.0009	0.001638	0.0009	0.002	0.0004	0.001	0.0048
Nickel (mg/l)	ND	0.0	0.0	0.0	0.080	0.037	0.610
Silver (mg/l)	0.03	0.546	0.03	0.051	0.060	0.055	0.0655
Zinc (mg/l)	0.12	0.2184	0.12	0.202	0.110	0.160	1.46
Ammonia (mg/l)	NA	--	--	--	25.6	11.85[f]	72.6
Selenium (mg/l)	ND	0.0	0.0	0.0	0.014	0.006	--
Thallium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Antimony (mg/l)	0.78	1.4196	0.78	1.316	NA	0.707[h]	--
Beryllium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Low TSS (ppm)	10[g]	0.0	112.0[g]	18.2	13.0	15.79	--
High TSS (ppm)	50[g]	0.0	336.0[g]	54.6	13.0	35.34	--
pH	8.2	6.5-7.5	6.5-7.5	6.5-7.5	7.53-7.8	6.5-7.8[i]	6.0-9.0

NA = not analyzed; ND = not detected; -- = not applicable or not available.

[a] 9.0 million gallons per day (MMGPD) is the reported average discharge during the daytime for the El Estero Wastewater Treatment Facility prior to the drought; 10.44 MMGPD is the calculated combined maximum brine/backwash discharge rate for the alternate 7500 AFY desalination project.

[b] Woodward-Clyde Consultants (1990), unless noted otherwise.

[c] Values based on numbers provided by Ionics and/or concentration factor of 1.82 for brine discharge and 1.0 for filter backwash.

[d] Source: Annual Report (1988) for El Estero WWTP (Summary of Analytical Results on Secondary Effluent, Monthly Average Table).

[e] Source: California RWQCB Waste Discharge Requirements for El Estero WWTP (Order No. 89-63); values listed are 6-month medians.

[f] Not including contribution from desalination brine/backwash discharge which is not available (seawater feed analyses not performed).

[g] Source: Ionics, 1990.

[h] Not including contribution from El Estero WWTP which is not available (i.e., not analyzed).

Table 3.3-4. PROJECTED COMBINED EL ESTERO/BRINE DISCHARGE - BACKWASH WATER QUALITY (1.0 MMGPD/10.44 MMGPD)[a]

Parameter	Incoming Seawater[b]	Brine Discharge[c]	Filter Backwash[c]	Combined Brine/ Backwash	El Estero Annual Maximums[d]	Projected Combined Effluent	Existing El Estero Waste Discharge Limitations[e]
Flow (MMGPD)	15.9	8.74	1.696	10.44	1.0	11.44	11.0
Arsenic (mg/l)	ND	0.0	0.0	0.0	0.016	0.001	0.610
Cadmium (mg/l)	0.04	0.0728	0.04	0.067	0.01	0.062	0.120
Chromium (mg/l)	0.06	0.1092	0.06	0.101	0.01	0.093	0.240
Copper (mg/l)	0.06	0.1092	0.06	0.101	0.02	0.094	0.120
Cyanide (mg/l)	NA	--	--	--	0.092	0.008[f]	0.610
Lead (mg/l)	0.005[g]	0.0091[g]	0.005	0.008	0.011	0.009	0.240
Mercury (mg/l)	0.0009	0.001638	0.0009	0.002	0.0004	0.001	0.0048
Nickel (mg/l)	ND	0.0	0.0	0.0	0.080	0.007	0.610
Silver (mg/l)	0.03	0.546	0.03	0.051	0.060	0.051	0.0655
Zinc (mg/l)	0.12	0.2184	0.12	0.202	0.110	0.194	1.46
Ammonia (mg/l)	NA	--	--	--	25.6	2.238[f]	72.6
Selenium (mg/l)	ND	0.0	0.0	0.0	0.014	0.001[f]	--
Thallium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Antimony (mg/l)	0.78	1.4196	0.78	1.316	NA	1.201[h]	--
Beryllium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Low TSS (ppm)	10[g]	0.0	112.0[g]	18.2	13.0	17.74	--
High TSS (ppm)	50[g]	0.0	336.0[g]	54.6	13.0	50.96	--
pH	8.2	6.5-7.5	6.5-7.5	6.5-7.5	7.53-7.8	6.5-7.8[i]	6.0-9.0

NA = not analyzed; ND = not detected; -- = not applicable or not available.

[a] 1.0 million gallons per day (MMGPD) is the reported typical discharge at nighttime for the El Estero Wastewater Treatment Facility; 10.44 MMGPD is the calculated maximum brine/backwash discharge rate for the alternate 7500 AFY desalination project.

[b] Woodward-Clyde Consultants (1990), unless noted otherwise.

[c] Values based on numbers provided by Ionics and/or concentration factor of 1.82 for brine discharge and 1.0 for filter backwash.

[d] Source: Annual Report (1988) for El Estero WWTP (Summary of Analytical Results on Secondary Effluent, Monthly Average Table).

[e] Source: California RWQCB Waste Discharge Requirements for El Estero WWTP (Order No. 89-63); values listed are 6-month medians.

[f] Not including contribution from desalination brine/backwash discharge which is not available (seawater feed analyses not performed).

[g] Source: Ionics, 1990.

[h] Not including contribution from El Estero WWTP which is not available (i.e., not analyzed).

[i] Not calculated; range encompasses upper and lower values for desalination plant and El Estero discharges.

Table 3.3-5. PROJECTED COMBINED EL ESTERO/BRINE DISCHARGE - BACKWASH WATER QUALITY (9.0 MMGPD/7.53 MMGPD)[a]

Parameter	Incoming Seawater[b]	Brine Discharge[c]	Filter Backwash[c]	Combined Brine/ Backwash	El Estero Annual Maximums[d]	Projected Combined Effluent	Existing El Estero Waste Discharge Limitations[e]
Flow (MMGPD)	10.6	5.83	1.696	7.53	9.0	16.53	11.0
Arsenic (mg/l)	ND	0.0	0.0	0.0	0.016	0.009	0.610
Cadmium (mg/l)	0.04	0.0728	0.04	0.065	0.01	0.035	0.120
Chromium (mg/l)	0.06	0.1092	0.06	0.098	0.01	0.050	0.240
Copper (mg/l)	0.06	0.1092	0.06	0.098	0.02	0.056	0.120
Cyanide (mg/l)	NA	--	--	--	0.092	0.050[f]	0.610
Lead (mg/l)	0.005[g]	0.0091	0.005[g]	0.008	0.011	0.010	0.240
Mercury (mg/l)	0.0009	0.001638	0.0009	0.001	0.0004	0.001	0.0048
Nickel (mg/l)	ND	0.0	0.0	0.0	0.080	0.044	0.610
Silver (mg/l)	0.03	0.546	0.03	0.049	0.060	0.055	0.0655
Zinc (mg/l)	0.12	0.2184	0.12	0.196	0.110	0.149	1.46
Ammonia (mg/l)	NA	--	--	--	25.6	13.94[f]	72.6
Selenium (mg/l)	ND	0.0	0.0	0.0	0.014	0.008	--
Thallium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Antimony (mg/l)	0.78	1.4196	0.78	1.275	NA	0.581[h]	--
Beryllium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Low TSS (ppm)	10[g]	0.0	112.0[g]	25.25	13.0	18.58	--
High TSS (ppm)	50[g]	0.0	336.0[g]	75.74	13.0	41.57	--
pH	8.2	6.5-7.5	6.5-7.5	6.5-7.5	7.53-7.8	6.5-7.8[i]	6.0-9.0

NA = not analyzed; ND = not detected; -- = not applicable or not available.

[a] 9.0 million gallons per day (MMGPD) is the reported average discharge during the daytime for the El Estero Wastewater Treatment Facility prior to the drought; 7.53 MMGPD is the calculated combined maximum brine/backwash discharge rate for the 5000 AFY "start-up" desalination project.

[b] Woodward-Clyde Consultants (1990), unless noted otherwise.

[c] Values based on numbers provided by Ionics and/or concentration factor of 1.82 for brine discharge and 1.0 for filter backwash.

[d] Source: Annual Report (1988) for El Estero WWTP (Summary of Analytical Results on Secondary Effluent, Monthly Average Table).

[e] Source: California RWQCB Waste Discharge Requirements for El Estero WWTP (Order No. 89-63); values listed are 6-month medians.

[f] Not including contribution from desalination brine/backwash discharge which is not available (seawater feed analyses not performed).

[g] Source: Ionics, 1990.

[h] Not including contribution from El Estero WWTP which is not available (i.e., not analyzed).

[i] Not calculated; range encompasses upper and lower values for desalination plant and El Estero discharges.

Table 3.3-6. PROJECTED COMBINED EL ESTERO/BRINE DISCHARGE - BACKWASH WATER QUALITY (1.0 MMGPD/7.53 MMGPD)[a]

Parameter	Incoming Seawater[b]	Brine Discharge[c]	Filter Backwash[c]	Combined Brine/ Backwash	El Estero Annual Maximums[d]	Projected Combined Effluent	Existing El Estero Waste Discharge Limitations[e]
Flow (MMGPD)	10.6	5.83	1.696	7.53	1.0	8.53	11.0
Arsenic (mg/l)	ND	0.0	0.0	0.0	0.016	0.002	0.610
Cadmium (mg/l)	0.04	0.0728	0.04	0.065	0.01	0.059	0.120
Chromium (mg/l)	0.06	0.1092	0.06	0.098	0.01	0.088	0.240
Copper (mg/l)	0.06	0.1092	0.06	0.098	0.02	0.089	0.120
Cyanide (mg/l)	NA	--	--	--	0.092	0.011[f]	0.610
Lead (mg/l)	0.005	0.0091	0.005	0.008	0.011	0.009	0.240
Mercury (mg/l)	0.0009	0.001638	0.0009	0.001	0.0004	0.001	0.0048
Nickel (mg/l)	ND	0.0	0.0	0.0	0.080	0.009	0.610
Silver (mg/l)	0.03	0.546	0.03	0.049	0.060	0.050	0.0655
Zinc (mg/l)	0.12	0.2184	0.12	0.196	0.110	0.186	1.46
Ammonia (mg/l)	NA	--	--	--	25.6	3.003[f]	72.6
Selenium (mg/l)	ND	0.0	0.0	0.0	0.014	0.002	--
Thallium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Antimony (mg/l)	0.78	1.4196	0.78	1.275	NA	1.126[h]	--
Beryllium (mg/l)	ND	0.0	0.0	0.0	NA	0.0[h]	--
Low TSS (ppm)	10[g]	0.0	112.0[g]	25.25	13.0	23.81	--
High TSS (ppm)	50[g]	0.0	336.0[g]	75.74	13.0	68.38	--
pH	8.2	6.5-7.5	6.5-7.5	6.5-7.5	7.53-7.8	6.5-7.8[i]	6.0-9.0

NA = not analyzed; ND = not detected; -- = not applicable or not available.

[a] 1.0 million gallons per day (MMGPD) is the reported typical low flow discharge at nighttime for the El Estero Wastewater Treatment Facility; 7.53 MMGPD is the calculated maximum brine/backwash discharge rate for the 5000 AFY "start-up" desalination project.

[b] Woodward-Clyde Consultants (1990), unless noted otherwise.

[c] Values based on numbers provided by Ionics and/or concentration factor of 1.82 for brine discharge and 1.0 for filter backwash.

[d] Source: Annual Report (1988) for El Estero WWTP (Summary of Analytical Results on Secondary Effluent, Monthly Average Table).

[e] Source: California RWQCB Waste Discharge Requirements for El Estero WWTP (Order No. 89-63); values listed are 6-month medians.

[f] Not including contribution from desalination brine/backwash discharge which is not available (seawater feed analyses not performed).

[g] Source: Ionics, 1990.

[h] Not including contribution from El Estero WWTP which is not available (i.e., not analyzed).

[i] Not calculated; range encompasses upper and lower values for desalination plant and El Estero discharges.

desalination project effluent waste brine and in the wastewater/waste brine combination for a 5000, 7500 and 10,000 AFY plant under variable flow rates from the El Estero WWTP. These values have been calculated, assuming normal operating conditions, using data collected via sampling by Woodward-Clyde Consultants and as provided by Ionics, Inc., and from annual reports from the El Estero WWTP and its 1987 NPDES permit application. The effluent flow data for the El Estero WWTP during the present drought is 6250 gpm (9 MGD) during the day and a minimum of 700 gpm (1 MGD) at night. With the current drought conditions, this facility has had average influent of 6.1-6.2 MGD (Acosta, 1990). During years with normal rainfall, the average influent is 9.0-9.5 MGD.

The data presented in Tables 3.3-1 through 3.3-6 are based on an RO system operating at 45 percent recovery on seawater and a seawater range of temperature of 10 to 19° C. In the reverse osmosis process, only a small amount of salts pass through RO membranes with the bulk remaining on the feed/brine side. The effluent brine stream contains all salts which do not pass through the membranes.

For the design recovery of 45 percent, the brine salinity will be slightly less than 1.82 times the seawater salinity. Salinity of the combined RO reject and wastewater from El Estero plant, under normal operating conditions, is expected to vary from 0.7 (25.9 ppt) to 1.6 (54.6 ppt) relative to the salinity of the intake seawater (35 ppt) (Table 3.3-7). Because treated effluent sewage discharge from the El Estero WWTP has a very low degree of salinity (0.8 ppt) and the desalination plant discharge would have higher salinity, the blending of the two waste streams is expected, under some combined flow regimes, to produce a discharge that more closely matches the salinity of the ambient ocean water (Table 3.3-7). These ranges in expected salinities reflect three scenarios of the desalination plant (5000, 7500 and 10,000 AFY) and the extremes in flow rates (1-9 MGD) expected from the daily operation of El Estero WWTP during the drought.

The Water Quality Control Plan for Ocean Waters of California states that the: "Initial Dilution Zone is the volume of water near the point of discharge within which the waste immediately mixes with ocean water due to the momentum of the waste discharge and the difference in density between the waste and the receiving water". For El Estero wastewater the outfall diffuser efficiency has been estimated to be 120:1 (seawater to effluent mixing ration) according to the 1987 NPDES permit application. The estimated zone of suspended solids deposition of up to 8.45 gm/m^2/year for the existing El Estero WWTP effluent discharge is shown on Figure 3.3-1 (Brown and Caldwell,

Table 3.3-7. PROJECTED COMBINED EL ESTERO/BRINE DISCHARGE-BACKWASH SALINITY[a]

Throughput Scenario	Seawater		Brine		Combined Brine and Backwash		El Estero Effluent		Combined Discharge	
	Chloride (ppm)	Salinity[b] (ppt)	Chloride (ppm)	Salinity[b] (ppt)	Chloride (ppm)	Salinity[b] (ppt)	Chloride (ppm)	Salinity[b] (ppt)	Chloride (ppm)	Salinity[b] (ppt)
10,000 AFY (Daytime with El Estero at 9 MMGPD)	18,980	34.3	34,429	62.2	32,467	58.7	432	0.8	19,569	35.4
10,000 AFY (Nighttime with El Estero at 1 MMGPD)	18,980	34.3	34,429	62.2	32,467	58.7	432	0.8	30,234	54.6
7500 AFY (Daytime)	18,980	34.3	34,429	62.2	31,919	57.7	432	0.8	17,342	31.3
7500 AFY (Nighttime)	18,980	34.3	34,429	62.2	31,919	57.7	432	0.8	29,166	52.7
5000 AFY (Daytime)	18,980	34.3	34,429	62.2	30,947	55.9	432	0.8	14,328	25.9
5000 AFY (Nighttime)	18,980	43.3	34,429	62.2	30,947	55.9	432	0.8	27,367	49.4

[a] Chloride values were based on typical seawater values, and data provided by Ionics, Inc. (1990).
[b] Salinity calculated from chloride values as per the following formula: chloride value in ppm x 0.001 = chloride value in ppt; chloride value (ppt) x 1.80655 = salinity value (ppt).

1982). The proposed discharge of RO reject water through the El Estero wastewater outfall is expected to increase both the overall effluent density and flowrate (Tables 3.3-1 through 3.3-6). This in turn will affect the zone of dilution surrounding the outfall diffuser. Due to varying flow rates and dilution for the combined brine/El Estero WWTP effluent discharge, as well as the increased density of the discharge (due to increased salinity), the zone and/or ratio of dilution will vary. No significant adverse effects are expected to be associated with this variation. Overall, the addition of the brine to the treated effluent will dilute the wastewater constituents.

Turbidity in the ocean is influenced by several factors including concentrations of total dissolved solids (TDS), amount of organic matter, and population densities of marine organisms. The RO treated effluent discharge is not expected to significantly reduce transmittance of natural light in ocean waters outside the zone of initial dilution due to the low (less than 1 NTU) turbidity of the discharge (Tables 3.3-1 through 3.3-6). This is considered a beneficial impact because the current wastewater discharge from the El Estero plant usually has a higher turbidity. During 1988, the wastewater effluent had a monthly variation between 1.8 and 8.3 (NTU).

The operation of intake pumps will generate seawater velocities through the screens that are quite weak (0.1 foot/second or less= 3 cm/second or less). This flow velocity is at the lowermost range of the natural ocean currents that have been reported (0-40 cm/second) in the vicinity of the outfall. Consequently, this flow (using the maximum value of 3 cm/second) is not considered sufficient to alter the natural ocean currents that prevail around the intake area.

The temperature of the RO treated effluent is expected to closely reflect the temperature of seawater at the intake structure since the RO process causes insignificant changes in temperature of treated seawater. The seasonal variability in seawater temperature at the intake is expected to be approximately 9-10 °C. Daily data on seawater temperature in nearshore waters between November 1989 to 1990 showed a range between 11 and 19 °C. The discharge from the El Estero WWTP plant is usually considerably (3-5 °C) warmer than ambient seawater. For example, during 1988, the monthly average temperature of this discharge ranged between 19.4 and 25.6 °C. Consequently, the mixing of RO treated effluent with El Estero wastewater will result in a discharge with a temperature more closely resembling that of ambient seawater, regardless of season.

The projected BOD of the combined El Estero and RO treated effluent will vary between 0.8 to 4.4 mg/l (Tables 3.3-1 through 3.3-6). This is lower than the maximum annual El Estero actuals and

is within the permitted levels set by the Regional Water Quality Board for El Estero. In the four offshore stations sampled by ECOMAR, Inc. during 1986 and 1988, dissolved oxygen varied from 5.8 to 11.4 mg/l depending on season, depth and location. Consequently, the concentration of oxygen in seawater in the vicinity of the outfall is adequate to satisfy the projected BOD of the combined El Estero and RO treated effluent.

The RWQCB designated acceptable pH range for the El Estero plant wastewater discharge is between 6.0-9.0. The pH of the brine effluent is expected to vary between 6.5-7.5. The wastewater from El Estero normally has a pH between 7.5 and 7.8. These values are very close to the normal ambient pH values of seawater (7.8-8.3) and within the permit limits.

In addition to the constituents shown in Tables 3.3-1 through 3.3-6, the RO brine will also contain: 1) the small amounts of anti-scalant, which is injected into the filtered seawater feed for scale control; and 2) all particulates, suspended matter, coagulant, polyelectrolyte, and organics not removed by the primary and secondary filters and cartridge filters.

As Tables 3.3-1 through 3.3-6 show, the combined wastewater and brine discharge would not be expected to exceed the metals limits set by the RWQCB for the El Estero WWTP for arsenic, cadmium, chromium, lead, copper, cyanide, mercury, nickel, silver, and zinc.

As previously stated, predominant current directions in the vicinity of the outfall were found to be roughly parallel to the coast either easterly, westerly, or northwesterly. Changes in flow direction (reversal) related to the tide cycle as well as numerous observations of current discontinuities, in terms of direction and speed, have been noted within the area. Consequently, the probability of impingements of plumes from wastewater discharges into the seawater intake pipeline is theoretically possible.

In order for that situation to occur, the wastewater discharge would have to travel a considerable distance and then rise from approximately 75 feet of depth. The wastewater discharge must also be subject to significant dilution if the assumption is made that wastewater discharge reaches the seawater intake. This wastewater has already undergone secondary treatment process and chlorination. Potential contaminants (e.g. bacteria) will be eliminated during the reverse osmosis process. Similarly, minimal or no water quality impacts are expected on Camby's Reef due to its considerable distance (1 mile) from the outfall terminus.

In conclusion, no unavoidable significant effects to oceanography and/or marine water quality are expected to result from construction and operation of the proposed desalination project.

3.3.2.3 Mitigation Measures. The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no unavoidable adverse significant effects are predicted, the numbered mitigation measures presented below are recommended to further mitigate impacts. R17-18 R17-19

The offshore discharge of concentrated seawater brine via the existing El Estero WWTP will require a review of the City's existing NPDES permit by the RWQCB. Under the current NPDES permit, a monitoring program is conducted. A brief summary of this program follows. As part of the outfall maintenance procedures, SCUBA divers follow the entire length of the submerged outfall to look for any structural defects along the pipeline and on the diffuser portion. All normal operations from the El Estero WWTP and the desalination plant continue uninterrupted during the annual maintenance procedures (Acosta, 1990).

The Regional Water Quality Control Board implemented by means of Order No. 88-148 as of July 31, 1989, monitoring and reporting program No. 89-63 for the City of Santa Barbara El Estero WWTP. The following parameters are monitored:

Density Profile (Tentatively starting in 1991)

"Plume trajectory will be evaluated using a drogue released at the beginning of each sampling. A density profile will be conducted up current (to avoid plume interference) of the diffuser mid-point. Depth, temperature, salinity and density will be recorded at one meter intervals. The drogue shall be monitored until it reaches the area encompassing seven stations. The transit time/speed of travel and the point of intersection of the station arc will be recorded for each sampling. General observations of current direction and relative magnitude will be made at each station during each sampling. Diver observations of current direction and relative speed will be made at each depth at each station".

Dye Test and Film/Video of Outfall Diffuser (Starting 1991)

"One dye test and film video will be conducted at the start of the sampling program. This will allow evaluation of dilution achieved within the zone of initial dilution (ZID) and general operation of the diffuser section of the ocean outfall. Effective dilutions will be established with water samples measuring dye concentrations at the point of dye introduction, at the diffuser ports, and in water samples collected at the boundary of the ZID (25 meters)".

Bottom Sediment Sampling (Every 3 years, beginning in 1992)

Bottom sediment sampling requirements include: "Sulphides, particle size, organic matter (volatile solids or TOC), BOD, total nitrogen, arsenic, cadmium, total and hexavalent chromium, copper, lead, mercury, nickel, silver, zinc".

These data can serve as a means to examine whether the combined El Estero and desalination project discharge is exceeding any of the limits for the various chemical constituents for which monitoring is required by the Regional Water Quality Control Board. The data can also be used to evaluate whether the combined discharge is affecting the zone of initial dilution, currents, salinity, temperature and seawater density. If necessary, additional samples of any other chemical constituent(s) (e.g. iron as ferric sulfate) not included in the aforementioned list but that are part of the brine discharge can be obtained by divers. ECOMAR, Inc. obtains seasonal seawater samples at stations near the outfall (see ECOMAR reports in reference section).

The monitoring program which is currently performed (or planned for the near future) for the El Estero WWTP outfall discharge is comprehensive and considered to be generally adequate for monitoring effects of the proposed combined discharge.

- 3.3-5: The City, shall, in conjunction with the RWQCB **develop an appropriate monitoring program which will protect marine water quality and the environment. A baseline study shall be conducted prior to desalination plant start-up and quarterly marine water quality/biological monitoring shall be conducted in accordance with RWQCB requirements during the operational phase.**

R17-6
R17-18
R17-19
R17-51

3.4 BIOLOGICAL RESOURCES

3.4.1 Environmental Setting

The biological resources assessment considers both terrestrial and marine resources.

3.4.1.1 Terrestrial Biology. Biological resources at the proposed desalination plant site, pump station/chemical treatment area, onshore pipeline routes, and intake pipe installation area on the beach are minimal.

The Laguna Channel, which is parallelled by a short section of the onshore pipeline route between the pump station/chemical area and the desalination plant, supports disturbed emergent and aquatic vegetation. Although of poor quality, this vegetation may be considered representative of valuable riparian wetlands. No unique, rare, or endangered plant or animal species are known to inhabit Laguna Channel or any of the onshore project component areas.

The brown pelican is a year-round resident of most of the southern California coastline. It is abundant on the mainland coast during August to November; breeding occurs on several islands offshore southern California and northern Baja California during June to October. The species is often very tolerant of human activity and readily utilizes various shoreline structures such as piers, breakwaters, groins, and buoys for roosting.

3.4.1.2 Marine Biology. The intake and discharge pipelines for the desalination plant project occur within the marine environment of the Santa Barbara Channel. As part of the Southern California Bight, this area is situated in a biological transition zone between the cold water biota to the north of Point Conception and the warm-water subtropical biota of Mexico to the south. Intermixing of currents and a highly variable submarine geology encourage rich and diverse biological associations (Woodward-Clyde Consultants and EIP Associates, 1990).

Santa Barbara Coastal waters are characterized by a variety of marine habitats including rocky reefs, kelp beds, and sand flats. These habitats support a rich assemblage of species. Four forests of giant R12-12
kelp within one mile of the coast line were reported prior to 1983 in the vicinity of the southern end of the existing oçean outfall (City of Santa Barbara Local Coastal Plan, 1981). Prior to the warm ocean currents that prevailed in 1983 during the oceanographic event of El Niño, kelp beds were

found east of Stearns Wharf near the project area. No kelp beds are currently existent in the project area, although some are present east of Montecito (Glantz, 1990).

Commercial and sport fisheries, including some shellfishing, are also present. However, the State Department of Health Services has established an emergency notification safety zone (prohibitive zone) for shellfish harvesting within a one and one-half mile radius of the El Estero wastewater outfall discharge (California Regional Water Quality Control Board, 1989).

Among the large number of fish species which may be observed in the City's coastal waters are sanddabs, surf perch, rock fish, croakers, sharks, halibut, and bass. Macroinvertebrates include sea urchins, octopus, starfish, shrimp, crab, scallops, and sea cucumbers (City of Santa Barbara Local Coastal Plan, 1981).

The marine organisms present in these coastal waters have been characterized by means of project-related studies rather than through a regular sampling program. The studies using trawls performed by Oceanographic Services, Inc. from 1975 through 1976 for the City of Santa Barbara sewage outfall are a valuable data base with regard to marine species abundance, distribution, biomass, and diversity near El Estero outfall. One (station 1) of the eight stations examined in those studies was in close proximity (approximately 500 feet) from the new El Estero outfall at approximately 8,700 feet from shore. Station 3 was placed in close proximity to the old outfall at that time which is now the proposed intake structure for the desalination project. Figure 3.3-1 shows the location of these stations.

Fifty-six species of fish were collected during the studies related to the installation of the new sewage outfall. Temporal and spatial variability in the species composition were found during the period of these studies. For example, during the first two surveys the speckled sanddab, pacific sanddab, California tonguefish, shiner surfperch, pink surfperch, white surfperch, yellow sculpin, juvenile rockfish, and white croakers were dominant in catches. These fish were absent in many of the catches during the next two surveys. The same studies found that the pink and white surfperch were more prevalent at the deeper stations (1, 5, 6, 8) than in shallow water (stations 2 and 7)(see Figure 3.3-1). Rainbow, walleye, and black surfperch were present more often at shallow water stations 2 and 7 (Figure 3.3-1).

The species of macroinvertebrates collected in trawls were listed in quarterly reports prepared by Oceanographic Services, Inc. (1976). The organisms collected most often were Astropecten armatus (sand star), Kelletia kelletii (Kellet's welk), Sicyonia ingentis (ridgeback shrimp), Lytechinus anamesus (white sea urchin), Octopus sp., Cancer anthonyi (rock crab), and Stichopus californicus (sea cucumber). The fish and macroinvertebrate populations appeared to be normal and representative for the coastal environment along southern California (Oceanographic Services, Inc. 1976).

ECOMAR (1980) reported that the benthic (bottom-dwelling) infaunal community near the outfall consisted of 195 species. The community was formed primarily of polychaete worms (92 species; 47 percent of the fauna), arthropods (40 species; 20 percent), mollusks (34 species; 17 percent), and echinoderms (15 species; 8 percent).

The sea bottom to depths of 30 m in the vicinity of the current outfall has been characterized as dominated by the Nothria-Tellina community. The Nothria-Tellina community consists of segmented worms (polychaetes) and clams (bi-valves). At many of the monitored sites, particularly those along the isobath of the old outfall (i.e., intake structure for project), the community is best described as the Tellina facies of the Nothria-Tellina community. At the depth of 70-75 feet of the present outfall, the Nothria-Tellina community, while still dominant, is increasingly mixed with species more characteristic of the Listriolobus community and Amphiodia-Cardita community (e.g., starfish) found further offshore (Brown and Caldwell, 1982).

Subtidal rocky reefs exist in the area near the outfall. Reefs are important for a large number of fish species. "One Mile Reef", "Harbor Reef", and "Camby's Reef" are substrate formations which support complex communities of macroinvertebrates and fish not found on soft or sand covered areas (City of Santa Barbara Local Coastal Plan, 1981). These reefs are within a one mile radius of the El Estero WWTP outfall through which the project brine discharge would occur. Camby's Reef (Figure 3.3-1) was monitored by means of a permanent transect since the first-predischarge survey of the current outfall in 1975 to approximately 1980. It is located approximately 1.5 miles south of the entrance to Santa Barbara Harbor and less than 0.5 mile west of the current operating outfall terminus. The water over the transect is about 20 m in depth. The variable habitats present in this reef support a complex assemblage of fish and macroinvertebrates not commonly observed on soft or sandy covered areas (Brown and Caldwell, 1982).

The most recent survey of marine organisms in the shallow-coastal waters of Santa Barbara was conducted on July 26, 1990 as a preliminary assessment of the feasibility of using the Stearns Wharf area for the intake pipeline for the desalination plant project. This survey area is considered to be generally indicative of the currently proposed intake location based on distance offshore and water depth. A one-day SCUBA reconnaissance and field survey of benthic and planktonic marine organisms using SCUBA was performed off Stearns Wharf by a four member team composed of Woodward-Clyde Consultants staff which included a professional marine biologist. The reconnaissance was started in the middle of a 100 foot corridor, approximately 550 feet south of the end of Stearns Wharf. Divers followed a 120° magnetic course until they reached the south end of the pier. The sites surveyed ranged from 22 feet to approximately 30 feet in depth. Visibility was estimated at 3 to 5 feet. A continuous survey of sea bottom conditions, biological species, potentially sensitive resources, and visual estimates of drift debris present throughout the area was performed which included photo documentation by two divers.

The area surveyed exhibited a continuous sandy flat bottom with scarce growth of organisms on its surface. Regular undulations, 2 to 3 inches high, caused by currents and sediment transport were present on the sea bottom. Patches of diatoms (i.e., microalgae) were also observed in this habitat.

The biological species diversity and abundance, based on visual estimates, was considered to be quite low. The following organisms, representatives of 5 phyla, were observed at least once, in the reconnaissance area:

Phylum Chordata
Fishes: California halibut (Paralichthys californicus), Pacific Sanddab (Citharichthys sordidus), Surfperch (walleye or white) (Hyperprosopon sp.)

Tunicates: Lobed tunicate (Cystodytes lobata)

Phylum Echinodermata
Sea stars: Bat starfish (Patiria miniata), Short-spined sea star (Pisaster brevispinus)

Phylum Arthropoda
Crabs: Rock crab (Cancer antennarius), Elbow crab (Heterocrypta occidentalis), Sheep crab (Loxorhyncus grandis)

Phylum Mollusca

Clams: Boring clam (possibly the wart-necked piddock = Chalae ovidae) Snails: Cowry sp., Kellet's whelk (Kelletia kelletii), Smooth turban snail (Norrisia norrisii), Sea pansy (Renilla kollikeri)

Macroalgae (seaweeds)

Eight species of brown and red algae (including one coralline) were found either attached to the substrate or as part of the drift. Macroalgal drift was considered to be common and abundant throughout the area surveyed, but seemed to increase with proximity to the pier. No attached kelp species were observed.

The plankton surveyed was composed of the following groups :

Predominant zooplankton (#/m3): Copepods (980), Larvaceans (150), Ostracods (50). These three groups composed less than 1 percent of total by number; Acantharia, larval fish, Chaetognaths (rare).

Copepods often make up over 80 percent of zooplankton biomass. The concentration of organisms reported here is high for open ocean but is common , although high, for some coastal regions.

Phytoplankton dominated by dinoflagellates, mostly Gymnodinium sp., Gonyaulax sp., was estimated to be present at a density of 200-250 ml^{-1}. Chlorophyll concentration is often used as an indicator of biomass and productivity of ocean waters. A chlorophyll a concentration of 2.41 ± 0.80 ng ml^{-1} was found during the one-day survey. This chlorophyll concentration at the site surveyed was high in relation to offshore waters. This suggests that this site may be productive due to input of nutrients from terrestrial sources. Phaeopigments are products of pigment degradation which were present at 0.04 ± 0.04 ng/ml. This concentration is low which means few breakdown products which could arise from senescent populations, dead cells and grazing, suggesting a healthy phytoplankton population in the area. The plankton populations observed were considered to be representative of a late successional community for Santa Barbara coastal waters. However, it is necessary to exert caution in extrapolating the plankton composition found in that survey to other sites and seasons due to the frequent shifts in species abundance and composition which planktonic organisms exhibit seasonally and vertically.

Marine mammals are also present in the local waters of Santa Barbara. These include the harbor seal, California gray whale, the Minke whale, Pacific white-sided porpoise, Dall's porpoise, and the Common porpoise (City of Santa Barbara Local Coastal Plan, 1981).

3.4.1.3. Threatened and Endangered Species. The species designated as Endangered by the state (California Department of Fish and Game) or Federal Government (U.S. Fish and Wildlife Service and National Marine Fisheries Service), which are known or likely to occur in the nearshore waters of the Santa Barbara Harbor, include the California brown pelican, southern sea otter, and the California gray whale (U.S. Army Corps of Engineers, 1988).

The brown pelican is relatively common in the nearshore waters of the Santa Barbara Harbor, particularly when schools of suitable fish prey species are present. Although usually foraging in waters further than one mile from the coast, it commonly roosts on Stearns Wharf, buoys, rock groins, and jetties in the nearshore waters of the Harbor area (U.S. Army Corps of Engineers, 1988). The brown pelican, as well as other marine birds, are intermittently present in the vicinity of the proposed intake pipe installation area at the weir/manhole cover on East Beach.

The southern sea otter presently occurs in nearshore waters along the central California coast where the population occupies a 235 mile range extending from Ano Nuevo Point, located 50 miles south of San Francisco, to the mouth of the Santa Maria River, located 11 miles south of Pismo Beach. The Santa Barbara coastal waters are outside this range. Wanderers outside this range are infrequent and no specific locations of preferred use have been identified. A population of sea otters has been established at San Nicholas Island, approximately 65 nautical miles south of the Santa Barbara area (U.S. Army Corps of Engineers, 1988). This attempt has had limited success.

The California gray whale annually migrates through nearshore waters of the Santa Barbara Harbor on their way to and from their Arctic feeding grounds and calving lagoons in Baja California. The peak of the southbound migration occurs in January in southern California, although southward moving animals are observed between December and February. The northbound migration occurs in two pulses. Typically, the February and March pulse includes adults and immature whales whereas the March through May groups are composed primarily of mother and calf pairs. There is mounting evidence that resident groups of gray whales may exist in southern California and other locations along the migration path (U.S. Army Corps of Engineers, 1988).

Other threatened, endangered or otherwise protected species of whales and pinnipeds are seen in the Santa Barbara Channel. However, their appearances are rare and transient and it is unlikely to see them in the immediate Santa Barbara Harbor area (U.S. Army Corps of Engineers, 1988).

3.4.2 Environmental Impacts

3.4.2.1 Terrestrial Biology. The onshore portions of the proposed project are located in an urban setting on property owned by the City of Santa Barbara. Most, if not all, vegetation in this portion of the project area is the result of landscaping activities by man. No significant adverse impacts to terrestrial biology will result from construction or normal operation of the proposed project. A portion of the beach will be disturbed when the high density polyethylene liner is introduced into the 42-inch concrete abandoned outfall from an existing weir box/manhole on the beach. No adverse impacts to flora or fauna are expected from the liner installation.

Riparian flora and fauna along Laguna Channel could be adversely impacted in case of an accidental spill of chemicals (e.g., dilute chlorine in water, sodium hydroxide, sulfur dioxide in water) transported via these pipelines. The likelihood of this occurring is considered to be low due to the project design which includes double walled pipe for secondary containment.

No adverse impacts on the brown pelican populations are expected either due to construction activities or to desalination plant operation. Additional habitat for roosting might be created for this species as the result of the placement of the buoy to mark the seawater intake for the project.

3.4.2.2 Marine Biology. Marine organisms in the project area could be affected by a variety of factors. Plankton are primarily regulated by water temperature, light penetration, and the availability of nutrients in the surface zone. Benthic organisms are sensitive to sediment characteristics such as grain size, sediment transport, and the presence of trace metals and hydrocarbons. Fish are less influenced by site-specific factors, but are indirectly affected by changes in their food supply.

The Initial Study performed by the City of Santa Barbara for the purpose of CEQA compliance listed the following areas as being of special concern in relation to biological resources: 1) possible changes in the diversity of species or numbers of any species of animals and plants; 2) deterioration and/or destruction of habitat to existing terrestrial, freshwater or marine organisms; 3) potential

reduction of numbers or habitat area of any unique, rare or endangered animal or plant species and; 4) introduction of new species of animals into an area or result in a barrier to the migration or movement of animals.

The project will not introduce new species either in the vicinity of the seawater intake or in the outfall. The intake structure will be located in approximately 28 to 30 feet of water and is not expected to result in a barrier to the migration of marine mammals or any other organisms due to its relatively small size.

The operation of intake pumps will generate seawater velocities through the screens that are quite weak (0.1 foot/second or less = 3 cm/second or less). This flow velocity is at the lowermost range of the natural ocean currents that have been reported (0-40 cm/second) in the vicinity of the outfall. Consequently, this flow (using the high value of 3 cm/second) is not considered sufficient to cause the entrainment of organisms (e.g. fishes, mammals) in the vicinity of the intake structure. However, plankton, fish and eggs that pass through the ⅜ inch filter screen at the entrance of the intake will be pumped along with seawater. These organisms, primarily planktonic, will expire when exposed to the desalination process. This is not expected to result in a significant depletion of these organisms because of their abundance and rapid regeneration as a consequence of their short life cycles.

Near shore environments within the vicinity of the project are reported to be primarily sandy flats. This homogenous habitat is expected to support organisms typical of such surroundings. No federally listed endangered marine species have been reported for the project area, although eelgrass beds (a sensitive habitat) may be present (Brewer, 1990). The City's most recent surveys have not revealed any eelgrass in the project area. In addition, as previously indicated, no kelp beds are currently found in the project area because of the mortalities in 1983 caused by warm currents introduced by El Niño (Glantz, 1990).

Because seawater intake and brine discharge pipelines already exist, construction impacts in terms of habitat destruction for marine organisms are expected to be minor. Construction-related impacts may occur when the prefabricated flexible polyethylene pipe (liner) is installed inside the intake pipe. This may cause some of the sea bottom sediments in areas adjacent to the construction to be resuspended. Increased seawater turbidity, decreased light penetration and disturbance/destruction of some benthic habitats may occur as a result of construction activities. The lowering and

installation of the intake structure will cause similar impacts since piles are proposed to be driven into the sea floor and anchors would have to be deployed to secure the construction barge in place. These impacts are anticipated to be minor and insignificant.

The benthic (bottom-dwelling) macrofaunal species living in close vicinity to the El Estero WWTP outfall are expected to be exposed to an increase in salinity because of the brine discharge. These organisms already colonize a disturbed region in terms of seawater chemistry because of the very low salinity (less than 1 ppt present in wastewater) of the El Estero discharge. Although these organisms are likely to be subject to a salinity higher than 1 ppt because of the rapid mixing of brine with seawater, it is reasonable to assume that they are already exposed to a broad range (1-35 ppt) in relation to ambient salinity (33-35 ppt).

The variability in currents in conjunction with the variability in effluent flow rates from both the El Estero WWTP and the desalination facility is expected to result in a gradient of salinities in the zone of initial dilution. Brine discharge through the El Estero outfall is expected to result in a range of effluent salinity from 25.9 to 54.6 ppt (Table 3.3-7) depending on the operating capacity of the desalination plant and on the wastewater discharge flow from the El Estero WWTP. Organisms in this area would be exposed to a change from the current discharge from El Estero WWTP of extremely low salinity (0.8 ppt) to levels that are close to normal oceanic salinity (33-35 ppt) or, in some instances, substantially higher (54.6 ppt) than ambient seawater. Benthic organisms unable to adapt to these changes in salinity could expire if they are unable to migrate and colonize other habitats. The potentially affected benthic organisms are not rare or unique and they are found in abundance in the general project area. Pelagic organisms are likely to be less affected by salinity changes since they usually have a short transient time through a given point in the water column. The project related variations in salinity that will occur are not expected to result in significant effects to marine organisms.

One ecological consequence of these changes in salinity is that organisms with broad salinity tolerances (i.e., euryhaline) are expected to predominate in the immediate vicinity of the discharge plume. It is possible that euryhaline benthic macrofauna are currently present in the area because of the variability in salinity that characterizes the zone of initial dilution. Rapid mixing between the combined wastewater/brine discharge and seawater is expected to occur with increasing distance from the discharge plume. Organisms inhabiting these regions are unlikely to be exposed to substantial changes in salinity, beyond that which occurs naturally in seawater.

The combined RO treated effluent and wastewater discharge is expected to increase the transmittance of natural light in ocean waters outside the zone of initial dilution due to the low (less than 1 NTU) turbidity of the discharge. This could lead to an increase in phytoplankton populations as a result of greater light penetration. This is considered a beneficial impact because the wastewater discharge from the El Estero plant usually has a higher turbidity (between 1.8 and 8.3 NTU of monthly variation during 1988).

The proposed RO plant is an emergency project to serve as a temporary source of water for the City of Santa Barbara for up to 5 years. Impacts to marine organisms inhabiting the area near the outfall will result from cessation of brine discharge when the desalination plant is shut down. When the desalination project is abandoned, the discharge plume will revert to the current conditions of El Estero effluent discharge. Salinity will drop and remain variable, particularly in the immediate vicinity of the plume. Organisms living in this region will either adapt to these changes in seawater chemistry or expire. Minor impacts in the form of increased turbidity and some benthic habitat destruction are also expected as a result of the removal of the intake structures, if applicable.

3.4.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no unavoidable adverse significant effects are predicted, the numbered mitigation measures presented below are recommended to further mitigate impacts.

3.4.3.1 Terrestrial Biology. The chemical feed lines will be run inside an outer polyethylene line to provide secondary containment for safety purposes and to lessen the potential of an accidental spill. This will prevent or minimize potential impacts to riparian vegetation and organisms along Laguna Channel in case of an accidental chemical spill. No additional mitigation measures are recommended to mitigate impacts to terrestrial biological resources.

3.4.3.2 Marine Biology. Most benthic organisms displaced or otherwise affected during the construction process are expected to recolonize the area in the years following construction. The plankton and small fish that pass through the ⅜ inch filter screen at the entrance of the intake will be pumped along with seawater. These organisms will expire when exposed to the desalination process. This is an unavoidable impact. However, this negative impact is not expected to result in

a significant depletion of planktonic organisms because of their abundance and rapid regeneration as a consequence of their short life cycles and this impact is not considered to be significant. The intake velocity (very slow) and screen size were both designed to limit impacts to marine biology. No additional intake related mitigation is recommended.

The existing monitoring program required by the RWQCB for the El Estero WWTP discharge is considered to be adequate for monitoring the effects of the treated sewage effluent.

R17-6
- 3.4-1: If future offshore discharge monitoring results indicate that RWQCB Waste Discharge Requirements are exceeded, corrective action shall be taken to meet the specified requirements. R17-18 R17-19 R17-51

3.5 NOISE

3.5.1 Environmental Setting

3.5.1.1 Introduction. A number of factors affect sound as it is perceived by the human ear. These include the actual level of sound (or noise), the frequencies involved, the period of exposure to the noise, and the changes or fluctuations in the noise levels during exposure. Levels of noise are measured in units called decibels. Since the human ear cannot perceive all pitches or frequencies equally well, measured sound levels are adjusted or weighted to correspond to human hearing. This adjusted unit is known as the "A-weighted" decibel. All references to noise in this EIR refer to A-weighted decibel levels, or dBA.

A single value of noise level in dBA describes a noise level at just one moment, but since very few noises are constant, other ways of describing noise over extended periods are used. One way of describing fluctuating sound is to present the noise heard over a specific time period as if it had been a steady unchanging sound. For this condition, a descriptor called the equivalent sound level Leq, is computed. Leq is the constant sound level (A weighted) that, in a given situation and time period (e.g., 1 hour - Leq[1], or 24 hours - Leq [24]) contains the same acoustical energy as the time-varying sound level during the same period (CalTrans, 1988). The Leq during a peak noise period is often used to determine necessary mitigation measures, while 24- hour cumulative Leq averaging methods are used to evaluate typical noise exposure in an area. Some of these averaging methods weight the evening and nighttime levels because of their greater potential for disturbance.

The Ldn (day/night sound level) is a 24-hour Leq, with a 10- dBA "penalty" added to the nighttime hours (10 pm to 7 am) to account for the greater sensitivity of noise disturbances during that period. The CNEL (Community Noise Equivalent Level) is a Ldn with an additional 5 dBA "penalty" added to the nighttime hours between 7 pm and 10 pm (Hatana, 1980).

Near the proposed desalination plant site, the major contributor to the existing noise environment is traffic. Roadway noise is dependent upon many factors: vehicle type, speed, number of vehicles, roadway surface and gradient, distance of the roadway to the receptor, ground surface (whether hard or soft), and shielding due to structures, sound walls, hills, the edge of a roadway, and earth berms between a receptor and the road. Generally, if vehicle speed and/or traffic volume increases, so does the noise level. However, heavy trucks typically operate at a more constant noise output than automobiles, regardless of speed, as they retain a nearly constant engine revolution level. There are also differences between automobiles and trucks in the location of their noise sources. The noisiest component on most trucks is the exhaust stack, while tires generate the greatest noise levels from cars.

Railroad operations along the Southern Pacific line between the El Estero WWTP and Cabrillo Boulevard are a major contributor to noise at the proposed onshore pump station/chemical treatment area. The rail traffic is infrequent, but creates intense noise events such that the total sound energy is nearly equivalent to that caused by traffic on U.S. 101. The intense noise events associated with the passage of a train can exceed 100 dB (at 100 feet from the track centerline). The two major components of rail traffic noise are locomotive noise and passenger or freight car noise.

3.5.1.2. <u>Noise Sources and Pertinent Land Uses</u>. The major noise source in the vicinity of the proposed desalination plant site is traffic on U.S. 101 and the Yanonali Street off-ramp. Other noise sources include a continuously operating pump fan contained within the El Estero WWTP (south of the intersection of Yanonali Street and the U.S. 101 off-ramp). Infrequent truck traffic on Yanonali Street is also a noise source in the area, as well as the more distant industrial operations occurring in the area.

The major noise sources at the proposed onshore pump station (contained within the El Estero WWTP) are railway traffic along the Southern Pacific line, which is located approximately 100 feet south of the proposed pump station and various equipment noise from the treatment plant. Truck

traffic from the warehouse adjacent to the east side of the site and traffic along Cabrillo Boulevard are also sources of noise at the proposed pump station.

Land uses in the vicinity of both the proposed desalination plant site and the onshore pump station are zoned primarily for industrial use. The El Estero WWTP occupies a large area to the south of the proposed desalination plant site. The Santa Barbara Rescue Mission lies adjacent to the eastern edge of the proposed desalination plant site. The City Corporation Yard lies to the west and U.S. 101 lies to the north of the site. The proposed onshore pump station lies within the southeast corner of the wastewater treatment plant and is adjacent to the Santa Barbara Fire Department training facility.

Woodward-Clyde Consultants conducted a noise survey on November 15 and 16, 1990, at the proposed desalination plant site and the general vicinity of the proposed pump station/chemical treatment area. The survey consisted of a 24-hour measurement at each proposed site and various spot measurements (10- to 15- minutes in duration) at locations adjacent to the proposed sites (including the Santa Barbara Rescue Mission). Figures 3.5-1 and 3.5-2 show the locations where the noise measurements were taken. Results of the noise survey are presented in Tables 3.5-1 and 3.5-2.

The 24-hour measurement taken at the center of the proposed desalination plant site (location M-1, Figure 3.5-1), yielded a Ldn 24-hour noise level of 68 dB and a maximum 1-hour Leq of 66 dB. Spot measurements taken around the site boundary measured Leq 15-minute noise levels as high as 71 dB along the north fence adjacent to U.S. 101, while levels along the south side (adjacent to Yanonali Street) were as high as 67 dB. The spot measurements taken at the western edge of the Santa Barbara Rescue Mission revealed Leq 15-minute levels as high as 68 dB.

The second 24-hour measurement which was taken in the general vicinity of the proposed pump station/chemical treatment area (M-1, Figure 3.5-2) was also measured on November 15 and 16, 1990. The Ldn 24-hour noise level at this location was 63 dB and the maximum 1-hour Leq was also 63 dB. The Leq 10- to 15-minute noise levels measured around that site ranged between 53 dB and 56 dB, while one measurement was as high as 65 dB.

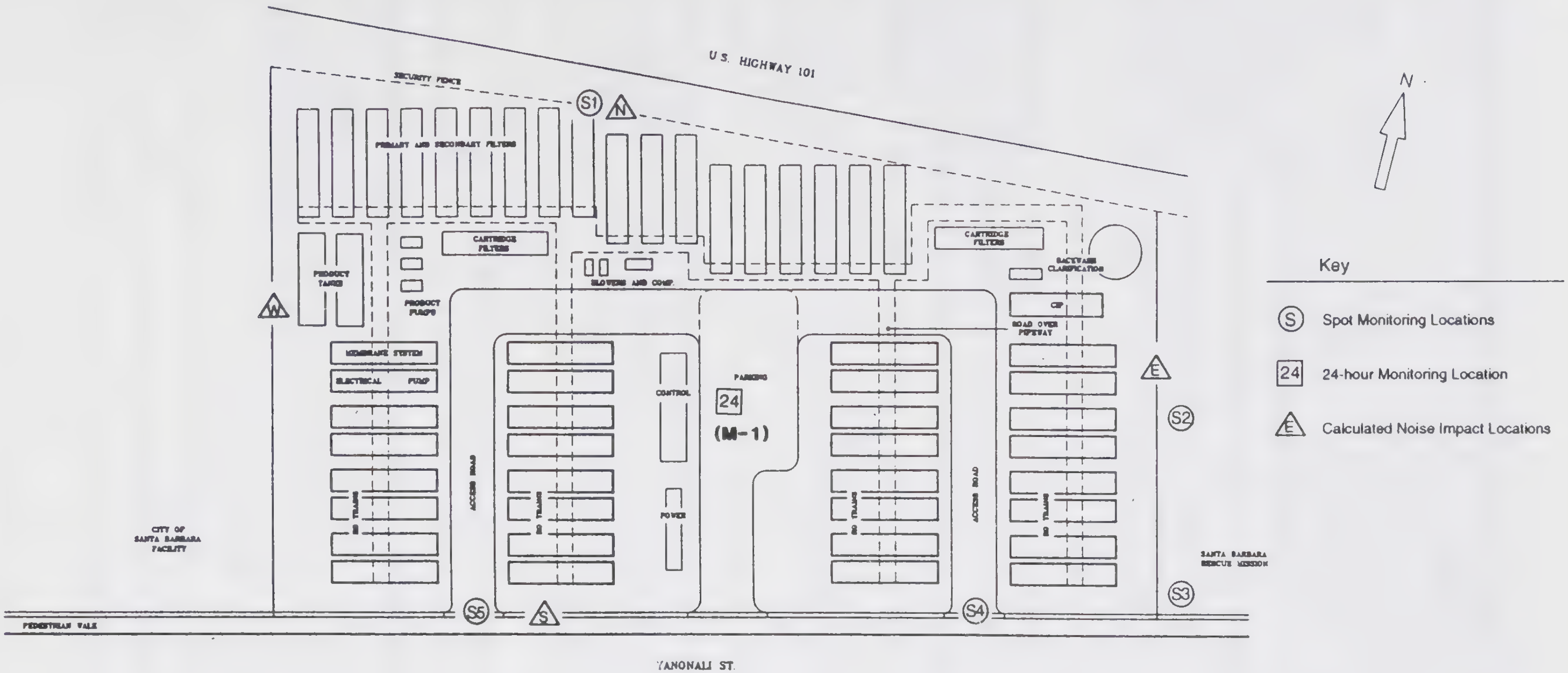

Figure 3.5-1
NOISE SURVEY MONITORING
LOCATIONS AND SPECIFIED IMPACT POINTS
FOR PROPOSED DESALINATION PLANT

0 10 20 30 40 50 60 70 80 90 100
GRAPHIC SCALE, FEET

NOTES:

1) Refer to Tables 3.5-1 through 3.5-5 for more information

2) Measured background noise level was 68 Ldn at 24-hour monitoring location

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IONICS — WATERTOWN, MASS. 02172, U.S.A.

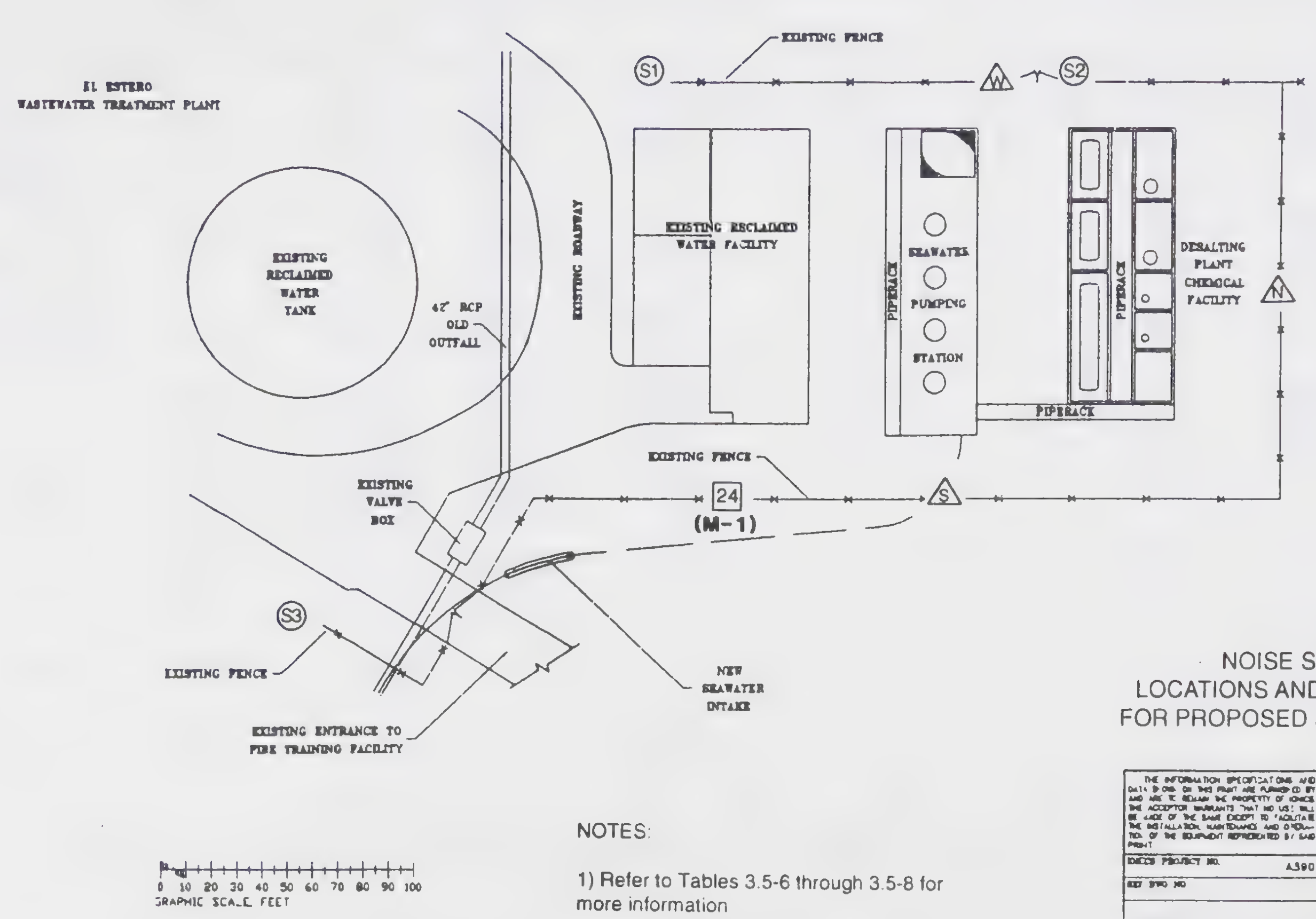
SITE LAYOUT
10,000 ACRE FEET/YEAR

CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER RO DESALTING PLANT

IONICS PROJECT NO.	A390	
REF DWG NO.	6142076	
DRAWN BY C.E.	DATE	7/16/90
CHECKED BY L.O.	DATE	7/17/90
PROJ/DES ENG R.F.	DATE	7/20/90
ENG APPROVAL C.G.	DATE	7/20/90

SIZE D — 6142076 — REV B

SHEET 1 OF 1



Key

- (S) Spot Monitoring Locations
- [24] 24-hour Monitoring Location
- (E) Calculated Noise Impact Locations

Figure 3.5-2
NOISE SURVEY MONITORING
LOCATIONS AND SPECIFIED IMPACT POINTS
FOR PROPOSED SEAWATER PUMPING STATION

NOTES:

1) Refer to Tables 3.5-6 through 3.5-8 for more information

2) Measured background noise level was 63 Ldn at 24-hour monitoring location

IONICS — WATERTOWN, MASS. 02172, U.S.A.

SITE LAYOUT
PUMP STATION & CHEMICAL FACILITY

CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER RO DESALTING PLANT

IONICS PROJECT NO.	A390
DRAWN BY HY	DATE 11/17/90
CHECKED BY	DATE
PROJ/RES ENG	DATE
ENG APPROVAL	DATE
SIZE	D
DWG NO.	6142065
REV	A
SHEET 1 OF	

Table 3.5-1. MEASURED NOISE LEVELS IN AND AROUND THE PROPOSED DESALINATION PROJECT SITE

Site[a]	Site ID	Date	Start Time	Measurement Duration[b]	Leq	Ldn	Lmax	Ln(10)	L(50)	L(90)
Center of Proposed Site	M-1	Nov 15-16	09:30	24-hr	63.3	67.8	85.8	--	--	43.4
North Boundary Along Freeway	S-1	Nov 15	11:40	15-min	67.6	--	77.7	70.6	66.1	59.1
	S-1	Nov 15	16:45	15-min	69.8	--	83.1	72.1	69.1	65.1
	S-1	Nov 16	07:43	15-min	70.6	--	80.3	73.1	70.1	64.6
Rescue Mission (West Side)	S-2	Nov 15	10:40	15-min	64.5	--	76.7	--	--	--
	S-2	Nov 15	15:45	15-min	65.0	--	79.1	67.1	62.6	60.6
	S-2	Nov 15	16:05	15-min	64.7	--	81.1	66.6	62.6	60.1
	S-2	Nov 15	17:20	15-min	63.4	--	74.2	65.1	62.1	60.1
	S-2	Nov 16	07:25	15-min	66.4	--	84.5	68.6	64.6	62.1
Rescue Mission (SW Corner)	S-3	Nov 15	17:05	10-min	66.4	--	80.2	68.6	64.1	62.6
	S-3	Nov 16	08:25	15-min	68.1	--	83.0	70.1	64.6	62.1
Access Gate Along Yanonali Street	S-4	Nov 15	11:00	15-min	66.5	--	80.5	68.1	64.6	63.1
Western Portion of Site Along Yanonali Street	S-5	Nov 15	11:20	15-min	62.0	--	74.3	64.6	60.6	58.1
	S-5	Nov 15	16:25	15-min	61.0	--	68.9	63.6	60.1	57.6
	S-5	Nov 16	08:05	15-min	62.4	--	74.5	64.1	61.1	59.1

[a] Refer to Figure 3.5-2 for approximate locations of measurements.

[b] 24-hour measurements were taken with Metrosonics DB-308 Noise Monitor and intermittent spot measurements (15 minute) were taken with Bruel and Kjaer Model 2231 Sound Level Meter.

Table 3.5-2. MEASURED NOISE LEVELS IN AND AROUND THE PROPOSED ONSHORE PUMP STATION/CHEMICAL TREATMENT AREA

Site[a]	Site ID	Date	Start Time	Measurement Duration[b]	Leq	Ldn	Lmax	Ln(10)	L(50)	L(90)
Fence Line 100 Feet South of Station	M-1	Nov 15-16	09:30	24-hr	58.5	63.0	89.5	--	--	43.3
Fence Line 100 Feet South of Station	S-1	Nov 15	14:35	15-min	55.8	--	71.5	56.6	54.1	53.1
	S-1	Nov 15	17:40	15-min	52.7	--	57.3	53.6	52.6	52.1
	S-1	Nov 16	08:50	15-min	54.9	--	69.2	55.6	54.6	53.6
Gate Along Northwest Fence	S-2	Nov 15	15:20	10-min	54.0	--	64.9	55.1	50.6	49.1
Fence Line 50 Feet West of SBFD Gate	S-3	Nov 15	14:55	15-min	64.8	--	77.2	67.6	56.6	51.6
	S-3	Nov 16	09:10	15-min	53.9	--	60.9	55.1	54.1	52.6

[a] Refer to Figure 3.5-2 for approximate locations of measurements.

[b] 24-hour measurements were taken with Metrosonics DB-308 Noise Monitor and intermittent spot measurements (15 minute) were taken with Bruel and Kjaer Model 2231 Sound Level Meter.

The maximum noise levels measured at the desalination plant was 86 dB and the Leq was 63 dB. The maximum noise level measured at the onshore pump station area was 90 dB and the Leq was 59 dB. Refer to Tables 3.5-1 and 3.5-2 for more information.

3.5.1.3 Noise Assessment Criteria. The project site and surrounding lands are in the City of Santa Barbara. The City has noise criteria which are discussed below.

A noise and land use compatibility chart is used by the City of Santa Barbara as a guide for evaluating noise impacts. The Noise Element of the General Plan for Santa Barbara recommends that the following noise standards must be considered as an objective which the City should be working towards.

Noise in outdoor commercial, industrial, or manufacturing areas is considered normally acceptable when Ldn levels are below 80 dB and is clearly unacceptable when the levels are equal or above 85 dB. In addition, levels below 70 dB are considered normally acceptable for transient lodging and levels equal or above 80 dB are considered clearly unacceptable. Levels in between these criteria require design measures and insulation to reduce noise levels.

3.5.2 Environmental Impacts

3.5.2.1 Introduction. Noise levels in the project area (both the desalination plant site and the onshore pump station/chemical treatment area) are assumed to remain at similar levels in future years to those measured during the current noise survey.

The area in and around the proposed desalination plant site is mostly impacted by traffic on U.S. 101. Noise levels from road traffic are expected to decrease in future years due to the applications of noise control technologies; however, expected increases in traffic volumes will probably counteract those reductions. Noise levels at the eastern edge of the proposed plant (adjacent to the Santa Barbara Rescue Mission) will decrease somewhat with the planned removal of the U.S. 101 southbound offramp on to Yanonali Street, thus noise levels measured at the center of the proposed plant site will probably also represent future levels near the western edge of the Santa Barbara Rescue Mission (without the desalination plant) once the offramp is removed.

Noise levels at the onshore pump station/chemical treatment area are impacted mostly by the rail traffic along the adjacent Southern Pacific railway, industrial activities occurring in the area and traffic on Cabrillo Boulevard. Continuation of existing noise levels from trains is considered in the Noise Element as a realistic projection for the intermediate future; however, as gasoline prices increase, the relatively energy-efficient train may be used more often. There is no indication that noise levels from other industrial activities will decrease or increase in future years.

3.5.2.2 Construction Noise Impacts. Construction noise occurring as a result of the development of the proposed project will temporarily increase ambient noise levels. Noise generated by construction equipment and activities could reach high levels depending upon the type of construction activity and its location with respect to a receptor. Construction equipment noise comes under the control of the Environmental Protection Agency's Noise Control Program (Federal Register, 1988). This regulation defines acceptable noise levels for construction equipment including portable air compressors.

Construction activities may be somewhat perceptible to residences to the north, south, and east of the site. The Rescue Mission to the east is nearest the desalination plant construction area. Construction equipment that would be used is anticipated to include earthmoving equipment (e.g., front end loaders, bulldozers, scrapers, road graders, and backhoes), trucks (dump trucks, water trucks, concrete trucks, delivery trucks, etc.), and other equipment. Typical noise levels for those various types of trucks range from 82 to 93 dB at a 50 foot distance (Bolt, Beranek and Newman, 1971). Typical noise levels for earthmoving tractors range from 76 to 95 dB at 50 feet. The highest construction noise levels experienced are typically from short-term pile driving, which might be used for short periods during foundation construction. Peak noise levels associated with pile driving can range from 95 to 105 dB at 50 feet. Construction activities associated with the onshore pump station/chemical treatment area and intake pipeline insertion on the beach will also generate noise and associated short-term impacts.

If noise impacts are experienced at the relatively distant residences, it will vary depending on the number and types of equipment and the distance from the construction equipment. Due to the distance from sensitive receptors, the scheduling of construction activities during daylight hours and the industrial nature of the desalination plant and pump station/chemical treatment facility site areas, construction noise is not expected to result in significant impacts to nearby land uses.

3.5.2.3 Operational Noise Impacts. Operation of the proposed desalination plant and the onshore pump station/chemical treatment area will result in an increase to noise levels surrounding both locations. Applicable noise guidelines for the project sites and vicinity include occupational health and safety requirements and the Noise Element of the City of Santa Barbara General Plan. The project operator must also adhere to federal and state occupational health and safety requirements for exposure of workers to noise sources. These requirements set forth hourly exposure periods and corresponding maximum noise levels which, if exceeded, trigger requirements for the provision of hearing protection for workers and establishment of noise control programs.

Impacts at the site boundary and sensitive land uses (i.e., residential areas) near the project sites were assessed for primary noise impacts which are attributable to the fixed source machinery (i.e., pumps) associated with the project. Total sound emitted was calculated by estimating steady-state sound pressure levels emanating from individual fixed sources on the project site using basic noise attenuation theory of a 6 dB reduction for every doubling of distance from the source. Predicted noise levels at the site boundary or sensitive land use areas were combined with existing noise to predict the future Ldn levels. Project related vehicular noise sources are not expected to have any impact on existing noise levels.

3.5.2.3.1 Desalination Plant Site. A list of equipment noise sources along with the noise rating (at 3 feet) at the proposed desalination plant site for both the 10,000 AFY and the 7500 AFY project scenarios are presented in Tables 3.5-3 and 3.5-4, respectively. The predicted impact to existing noise levels at the site boundary (desalination plant) and the Santa Barbara Rescue Mission are shown in Table 3.5-5. Figure 3.5-1 depicts the locations where these impacts are estimated to occur.

The predicted levels at the site boundary for both the 10,000 AFY and the 7500 AFY alternatives (see Table 3.5-5) are expected to be below the normally acceptable noise level of 80 dB recommended in the Noise Element for industrial land uses. The highest predicted levels at the property line are expected to be as high as 77 dB along the western edge adjacent to the City Corporation Yard and the northern edge adjacent to U.S. 101. Noise levels along the eastern edge of the site (which will share a common border with the Santa Barbara Rescue Mission) are predicted to be as high as 72 dB (for both project alternatives). This exceeds the normally acceptable noise level of 70 dB recommended by the Noise Element for Transient Lodging, thus

Table 3.5-3 EQUIPMENT NOISE SOURCES AT THE PROPOSED DESALINATION PROJECT SITE (10,000 AFY)[a]

Equipment	Number of Units	Estimated Percent of Time in Use	dB Rating (3 feet)
Continuous Duty Pumps			
High Pressure Pump	16	100	75[b]
Product Pump	3	100	90
Auxiliary Air Compressor	1	100	95
Auxiliary Vacuum Pump	1	100	90
Intermittent Duty Pumps			
Flush Pump	1	5	85
Facility Service Pump	1	30	80
Cleaning Pump	1	2	85
Auxiliary Air Blower	1	40	90
Air Conditioning Control Room System	1	35	75
Exhaust Fans for Pump Trailers	16	100	75

[a] Source: Ionics, Incorporation (1990).

[b] Pumps are rated at 95 db; however, Ionics plans to house pumps in insulated trailers that will reduce levels to 75 dB. **Ionics has committed to mitigating noise levels to acceptable levels as defined by City criteria. Ionics' acoustical engineering consultant is developing final noise mitigation design measures considering noise levels/frequency spectrums of the equipment to be utilized, proximity to fenceline and adjacent Rescue Mission, background noise levels, attentuation, and effectiveness of insulating and shielding measures.**

Table 3.5-4 EQUIPMENT NOISE SOURCES AT THE PROPOSED DESALINATION PROJECT SITE (7500 AFY)[a]

Equipment	Number of Units	Estimated Percent of Time in Use	dB Rating (3 feet)
Continuous Duty Pumps			
High Pressure Pump	12	100	75[b]
Product Pump	2	100	90
Auxiliary Air Compressor	1	100	95
Auxiliary Vacuum Pump	1	100	90
Intermittent Duty Pumps			
Flush Pump	1	5	85
Facility Service Pump	1	30	80
Cleaning Pump	1	2	85
Auxiliary Air Blower	1	40	90
Air Conditioning Control Room System	1	35	75
Exhaust Fans for Pump Trailers	12	100	75

[a] Source: Ionics, Incorporation (1990).

[b] Pumps are rated at 95 dB; however, Ionics plans to house pumps in insulated trailers that will reduce levels to 75 dB.

Table 3.5-5. PREDICTED NOISE LEVELS AT THE PROPOSED DESALINATION PLANT SITE AREA

Location[a]	Predicted Impact 10,000 AFY Ldn	Predicted Impact 7500 AFY Ldn	Predicted Noise Level 10,000 AFY Ldn	Predicted Noise Level 7500 AFY Ldn
Southern Property Line	66	66	74	74
Western Property Line	70	70	77	77
Northern Property Line	70	70	77	77
Eastern Property Line (Rescue Mission)	64	60	72	70

[a] Note: Impacts were added to background level of 68 Ldn.
[b] Refer to Figure 3.5-1 for locations.

mitigation measures to achieve a level of 70 dB or lower will need to be included in the project design.

3.5.2.3.2 Onshore Pump Station/Chemical Treatment Area. Tables 3.5-6 and 3.5-7 list the equipment noise sources along with the noise rating (at 3 feet) at the proposed onshore pump station/chemical treatment site for the 10,000 AFY and the 7500 AFY project scenarios, respectively. Predicted noise levels at the site boundary are expected to be below the normally acceptable level of 80 dB for the land use of this area (see Table 3.5-8). In addition, the noise level impact at the proposed Park Plaza development area (which includes transient lodging) was predicted. The Park Plaza area lies approximately 350 feet to the southeast of the pump station across the Southern Pacific rail tracks. An existing background noise level of 65 CNEL (Interface, 1988) was used to estimate future levels. An increase of less than 1 db is predicted as a result of the operation of the proposed pumping station for both project alternatives. This increase will not exceed allowable levels, thus significant noise impacts will not occur.

3.5.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no unavoidable adverse significant effects are predicted, the numbered mitigation measures presented below are recommended to reduce noise to insignificant levels.

Measures to reduce the noise levels generated by the pumps at the desalination plant site are included in the facility design. This includes sound proofing the trailer enclosures in which the pumps are housed.

- 3.5-1: Measures to further reduce noise levels at the eastern edge of the desalination plant site are required to reduce noise levels to at least the 70 Ldn level. These measures include locating the exhaust fans for each of the RO pump trailers at the western edge (versus eastern) of each trailer. The product pumps, air blowers and vacuum pumps shall be shielded so that noise levels of less than 80 dB (at 3 feet) are generated. These measures are predicted to reduce total Ldn noise levels at the edge of the site adjacent to the Santa Barbara Rescue Mission by 2 dB (from 72 to 70).

Table 3.5-6. EQUIPMENT NOISE SOURCES AT THE PROPOSED ONSHORE PUMP STATION/CHEMICAL TREATMENT AREA (10,000 AFY)[a]

Equipment	Number of Units	Estimated Percent of Time in Use	dB Rating (3 feet)
Continuous Duty Pumps			
Filter Feed Pumps	4	100	85
Auxiliary Vacuum Pump	1	100	90
Intermittent Duty Pumps			
Chemical Unloading Pump	2	2	80

[a] Source: Ionics, Incorporated (1990).

Currently a wall approximately 10 feet tall exists at the edge of the Rescue Mission, which will result in further reduction of noise levels at the surface level. The conceptual design for the Rescue Mission called for an interior level of 45 dB, assuming an external level of 70 dB (Mitchell, 1985). Assuming the Rescue Mission structure actually reduces outside noise levels by 25 dB, an interior level of 45 db should be achievable if the mitigation recommended herein is implemented.

- 3.5-2: Noise monitoring shall be conducted after start up of the desalination plant to assure that these levels are achieved and, if not, additional noise mitigation shall be implemented.

Since noise levels at the property boundary for the proposed onshore pump station are calculated to be within the "normally acceptable" levels, no mitigation is deemed necessary.

To minimize temporary increases in noise near the project sites due to construction of the project, construction activities will be scheduled in accordance with City standards which limit work hours.

- 3.5-3: Required construction equipment noise-control measures include the use of
R9-8 mufflers, derating engines, sealing and lubricating tracks on bulldozers, isolating engine vibration, and adhering to a regular maintenance schedule in order to help reduce construction related noise levels.

3.6 RISK OF UPSET

3.6.1 Introduction

This section discusses the potential issues of concern regarding "risks" associated with the proposed desalination facility. This section addresses hazards that may be associated with hazardous material use and storage.

Hazardous material transportation, use, and storage are regulated by numerous Federal, State, and local laws and regulations. These regulations stipulate minimum standards for design of facilities, storage requirements, spill prevention procedures, emergency response and contingency plans, risk management and employee training procedures. The proposed desalination project will adhere to

pertinent regulations including the Uniform Building Code, Article 80 of the Uniform Fire Code, and related regulations related to risk management. The design of the proposed project will include double containment piping for chemical feed lines, specially treated concrete containment structures for chemical storage areas, and monitoring of chemical feed systems. None of the chemicals R2-1
proposed for use are flammable. The chemical of greatest potential concern from a risk standpoint R2-2 R8-2
which is associated with the proposed project is chlorine. ~~and sulfur dioxide. Both of these chemicals~~ **Chlorine** will be received in dilute aqueous form (0.3% solution) from existing facilities at the El Estero WWTP for use at the desalination facility.

3.6.2 Issues

Where there is a hazard associated with a project, there is usually some element of risk associated with that hazard, however small it might be. Risk can be described as a measure of the potential economic loss or human injury that can occur, including the magnitude of the loss or injury if it occurs. Risk can be communicated in a qualitative way, such as high, medium, or low, or in quantitative terms using numerical value estimates. For practical purposes, the evaluation of risk potential should be based on a qualitative evaluation of the project.

The primary risk of upset for the proposed desalination project relates to the possible release of hazardous chemicals in air or on land or water. The chemicals of potential concern, based on their hazardous nature and/or quantity involved, include chlorine, ~~sulfur dioxide,~~ caustic soda (sodium hydroxide), ferric chloride, and carbon dioxide.

There are other chemicals proposed that could cause some incompatibility concerns that are considered a slight risk. These chemicals include antiscalant (polymer solution of polyacrylic acid), zinc orthophosphate, and polyelectrolyte (polymer solution). These chemicals will be used in small quantities and are non-volatile and non-hazardous and, therefore, are not considered to present a major risk or concern.

~~Both the~~ Chlorine ~~and sulfur dioxide~~ will be stored at existing El Estero WWTP facilities and no increase in chlorine storage is required. Chlorine usage and therefore frequency of deliveries to the existing El Estero WWTP storage facilities will be increased. Chlorine is presently in use at the treatment plant. The chlorine ~~and sulfur dioxide~~ will be dissolved in water at the El Estero WWTP and then the solution will be pumped through the pumping plant/chemical area to the desalination

plant. The proposed pumping between El Estero WWTP and the desalination plant will not contain highly concentrated chemicals; however, there is still a potential risk associated with an accidental release.

The desalination plant will use approximately 880 pounds of chlorine ~~and 872 pounds of sulfur dioxide~~ per day. Current usage at the El Estero WWTP is approximately 1700 pounds of chlorine ~~and 450 pounds of sulfur dioxide~~ per day. The proposed project will substantially increase the present usage amount at the WWTP. This increase will elevate the hazard associated with the existing storage and use of chlorine ~~and sulfur dioxide~~ at the El Estero WWTP.

Caustic soda (sodium hydroxide or other acceptable alternative) will be used for pH adjustment of the treated water. Approximately **4,020** pounds per day will be required. The caustic soda will be stored in a **6,000** gallon tank located at the proposed pump station/chemical treatment facility at the El Estero WWTP. Double containment will be used to supply a 500 gallon per day tank located at the desalination plant. This piping will be routed through the El Estero WWTP property and under Yanonali Street (refer to Figure 2-1).

Ferric chloride will be used as a filter aid for pretreatment of the seawater feed. Approximately **4400** pounds per day will be required. The chemical will be stored in a **6000** gallon tank located at the proposed chemical facility. The chemical will be injected into the seawater at the proposed pumping station.

Carbon dioxide will be used for pH adjustment of the RO feedwater. Approximately **3308** pounds per day will be required. It will be stored in a 32 ton tank, which will also be located at the proposed chemical facility. The carbon dioxide will be injected into the seawater at the proposed pumping station. Due to the volume of carbon dioxide, this could present a hazard (e.g., as an asphyxiant or sudden release of pressure) just due to the amount of CO_2 stored if the storage container were to suddenly release its contents.

The primary issues of potential concern involve the potential hazard to plant personnel and the general public in the vicinity of the plant caused by:

- Accidental release of chlorine, ~~sulfur dioxide,~~ or carbon dioxide;

- Possible rupture of the caustic soda line due to construction of utilities along Yanonali Street sometime during the project life;

- CO_2 storage tank failure and release of up to 32 tons of CO_2;

- Accidental spill of ferric chloride; and

- Accidental offshore release of chlorine (up to 150 pounds during chlorination of intake).

3.6.3 Environmental Impacts

An accidental release of chemicals from the proposed project would potentially have adverse effects on plant personnel and the general public in the vicinity of the plant and, possibly, aquatic life in Laguna Channel.

The El Estero WWTP lies immediately across Yanonali Street to the south of the proposed desalination facility. The proposed project includes the seawater pumping station/chemical facility, which is located near the southeast corner of the El Estero WWTP.

Several potentially sensitive land uses that could be affected by an accidental release are located in the general vicinity of the proposed project chemical areas. Immediately to the east of the proposed plant is the Santa Barbara Rescue Mission. This is an overnight shelter with facilities for 106 people with 10 to 15 employees. South of the proposed pump station/chemical treatment area, just across the railroad tracks, is the proposed Park Plaza development. The remaining areas in the vicinity of the plant are industrial.

Stearns Wharf is located within approximately 1500 feet of the proposed offshore intake structure where chlorination of the intake with up to 150 pounds of chlorine gas may be performed on an as needed basis. Recreational boat use occurs in the vicinity of the proposed intake.

~~Both~~ Chlorine is a ~~and sulfur dioxide are~~ hazardous gas that is already stored in bulk quantities at the El Estero WWTP. As stated previously, the proposed desalination project will increase usage, but not the storage of chlorine. Accidental rupture of the storage vessels could release significant amounts of chlorine. However, since these chlorine is already stored at the El Estero WWTP, this project will not introduce a new risk to the environment, but it will increase the probability of an accident. The probability of an accident will increase, since increased handling and throughput will be required.

Since the chlorine ~~and sulfur dioxide~~ will be pumped to the desalination plant as a dilute aqueous solution, a breach of the pipeline would not be expected to pose a significant hazard.

Accidental release of large quantities of carbon dioxide would not create a hazard to the general public in the vicinity of the plant, due to the rapid dispersion and non-toxic nature of carbon dioxide. The primary hazard would be to plant personnel, since there is a danger of asphyxiation by displacement of oxygen. Additionally, contact with liquid carbon dioxide would cause frostbite and/or freeze burns.

The caustic soda pipeline will also be doubled-contained. The line will be traced with metal tape to facilitate locating the line should future excavations be planned or required in the vicinity of this line (e.g., in Yanonali Street).

Design of the ferric chloride storage facility and the storage of other chemicals will include treated concrete containment structures to prevent the spread or mixing of incompatible chemicals in case of tank rupture. Design of chemical storage and piping will be done to minimize the hazards caused by pipeline breaks and leaks. The potential chemical hazards associated with the proposed project are generally summarized in Table 3.6-1.

3.6.4 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. However, no additional mitigation measures are recommended.

Table 3.6-1. SUMMARY OF POTENTIAL CHEMICAL HAZARDS BY CHEMICAL TYPE

Location and Chemical[a]	Concentration and State	Potential Hazard
EL ESTERO WWTP (Bulk Storage)		
Chlorine	100%, concentrated gas	Sudden release to atmosphere of toxic gas
~~Sulfur dioxide~~	~~100%, concentrated gas~~	~~Sudden release to atmosphere of toxic SO_2 gas~~
EL ESTERO WWTP (Storage) TO PROPOSED PUMP STATION/CHEMICAL STORAGE AREA		
Chlorine	0.3% solution, liquid	Liquid release during transport
~~Sulfur dioxide~~	~~0.3% solution, liquid~~	~~Liquid release during transport~~
DESALINATION PUMP STATION/CHEMICAL STORAGE TO DESALINATION PLANT		
Chlorine	0.3% solution, liquid	Liquid release during transport
~~Sulfur dioxide~~	~~0.3% solution, liquid~~	~~Liquid release during transport~~
Sodium metabisulfite	**38% solution, liquid**	**Liquid release during transport**
Carbon dioxide	0.01% solution, liquid 100%, concentrated gas	Liquid release during pipeline transport; failure of 32 ton tank and atmospheric release
Sodium hydroxide	50% solution, liquid	Liquid release

Table 3.6-1. SUMMARY OF POTENTIAL CHEMICAL HAZARDS BY CHEMICAL TYPE (continued)

Location and Chemical[a]	Concentration and State	Potential Hazard
DESALINATION PLANT STORAGE/ HANDLING OF CHEMICALS		
Ferric chloride	40% solution, liquid	Tank storage container failure; mixing with incompatible chemicals
OFFSHORE WORKBOAT/SHOCK CHLORINATION OF INTAKE		
Chlorine	100%, concentrated gas	Release of one, 150 pound cylinder, atmospheric release

[a] Refer to Table 2-7 for information on quantities stored, daily usage, storage location, and method of storage.

The proposed desalination project is subject to compliance with Article 80 of the UFC which strictly regulates the above ground storage and use of hazardous materials. Article 80 and other hazardous materials regulations will help ensure that potential hazards are limited to the extent practicable.

Appropriate mitigation measures for the potential hazards discussed earlier in this assessment will be based on a detailed hazard evaluation. This evaluation will be coordinated with the Risk Management Plan for the El Estero WWTP. Because both facilities involve the treatment and storage of hazardous materials, a Risk Management Plan is required under California Health and Safety Code, Chapter 6.95.

The following measures are expected to reduce the risk or probability of an accident involving the hazardous chemicals at both facilities.

Potential hazards resulting from releases of chlorine and sulfur dioxide at the bulk storage tanks may be reduced by reviewing and modifying, as appropriate, the present design and operating procedures at the El Estero WWTP. This evaluation will be performed as part of the Risk Management and Prevention Program (RMPP) for the El Estero WWTP. The pipelines from the El Estero WWTP storage areas to the desalination plant will not contain concentrated chemicals, thus hazards from breaks in these lines are already minimized. Additionally, the piping will be doubled-contained. Provisions for detecting leakage from the primary pipe liner into the secondary containment pipeline will be included in the design (e.g., visual check points, constant monitoring of water quality parameters, etc.).

Rupture of the caustic soda line would result in the release of concentrated caustic soda. This would pose a hazard to personnel in the immediate area of the breech. However, this type of accident is not expected to create a hazard to the general public in the vicinity of the project site.

As with caustic soda, accidental release of ferric chloride would not be expected to pose a threat to the general public. Ferric chloride is a very corrosive material and would cause burns to any plant personnel coming in direct contact with this chemical.

General mitigation measures will include programs such as a personnel training program and development of emergency response procedures. These programs will be developed and put in

place prior to plant start-up to train plant personnel about potential hazards to themselves and the general public and how to respond properly to an emergency situation.

3.7 HUMAN HEALTH

3.7.1 Issues

The proposed desalination project has the potential to affect human health in two primary ways. This assessment considers the following two possible human health related issues associated with the proposed project:

- Potential human health effects associated with an accidental hazardous chemical spill/release; and

R7-1
R7-3
R7-4
R8-2

- Potential health effects associated with human consumption of the finished water produced by the RO desalination plant.

Assessments of these issues as they relate to the proposed project follow.

3.7.2 Environmental Impacts

3.7.2.1 Accidental Chemical Spill/Release. Operation of the proposed desalination project will involve the use of several chemicals which have the potential to affect human health if they are accidentally spilled/released and subsequently come in contact with desalination plant and/or El Estero WWTP personnel or the general public.

Most of the chemicals that will be stored, transported, and/or used at desalination project facilities would have insignificant consequences if accidentally spilled. Conformance with the strict requirements of Article 80 of the Uniform Fire Code (UFC) for hazardous materials use and proper storage and containment of storage areas and secondary containment of chemical lines to contain spills will limit the potential for impacts to the general public.

The chemical of potential concern for the general public is chlorine gas. ~~and sulfur dioxide gas.~~ This material is stored in bulk quantities at the El Estero WWTP and a portion of that supply will be

used for supplying dilute aqueous solutions of chlorine ~~and sulfur dioxide (both~~ (at 0.3 % strength) to the desalination project. The amount of ~~storage and~~ handling of chlorine ~~and sulfur dioxide~~ at the El Estero WWTP will increase due to the desalination project, thereby increasing the likelihood and potential magnitude of a gaseous release of chlorine which is a toxic substance. In addition, gaseous chlorine will also be used periodically to chlorinate the intake system (at offshore intake). Although the risks are slight, accidental catastrophic release of gaseous chlorine ~~or sulfur dioxide~~ could potentially adversely affect human health -- chlorine is toxic and considered to be "acutely hazardous."

The proposed desalination project will also involve use of sodium hydroxide and ferric chloride. An accidental release of sodium hydroxide or ferric chloride could cause burns to plant personnel coming in contact with them, but would not affect the general public. Compliance with Article 80 of the UFC and other hazardous material related regulations will reduce the likelihood of an accidental release occurring to an acceptable level.

Refer to Section 3.6 (Risk of Upset) for more information about chemical use and hazards.

3.7.2.2 <u>Finished Water Quality</u>. The proposed desalination project will produce high quality water which will allow people to meet basic health and safety needs. The finished water to be produced R9-6
by the proposed desalination facility will meet all primary and secondary drinking water standards, R9-7
testing requirements, and procedures set forth in Title 22, California Code of Regulations, R13-13
Environmental Health (1989).

In addition, the proposed RO facility design will comply with the following standards:

- Total Trihalomethane Formation Potential not to exceed 100 ppb at the point of interconnection with the City main on Yanonali Street;

- Chlorine concentration will be in the range of 0.2 to 1.5 ppm (as required by City); and

- Proper treatment for corrosion control and compatibility with the City's existing system (as required by the City).

Refer to Table 2-9 which compares the predicted finished water quality (at various temperatures) with applicable primary and secondary drinking water standards. The chlorine dosage and contact time will be controlled to meet requirements related to adequate disinfection of public water supplies and to control the formation of trihalomethane (THM) at a level substantially below current Federal and State limits. Product water from the seawater reverse osmosis is expected to be superior to that from conventional surface water treatment plants when considering possible increases in THM's in distribution systems because reverse osmosis removes virtually all of the THM precursors. The finished water would meet all current standards and the pretreatment process would be modified as necessary to achieve more rigorous standards which may be applied in the future.

A comparison of the predicted finished water quality of the water produced by the proposed desalination facility with the quality of the City's surface and groundwater supplies in 1989 is presented in Table 3.7-1. In addition, for reference purposes, this table includes a listing of applicable State Primary and Secondary Standards and recommended levels for Unregulated Constituents.

A review of this tabular comparison indicates that the predicted finished water quality for the desalination facility is within the levels required by the subject standards. Although the proposed desalination facility will produce water with lower concentrations of most constituents than the City's supplies in 1989, the desalinated water will contain higher levels of the following constituents: chloride, zinc, sodium, and potassium. Refer to Table 3.7-2 for more information.

Although the desalinated water will have higher concentrations of these substances than the City's supplies did in 1989, the predicted quality of the desalinated water is still well within the applicable standards. The predicted higher levels of chloride, zinc, sodium, and potassium, when compared to the City's traditional water supplies, will meet applicable standards. Refer to Table 3.7-3 for a comparison of sodium levels in water sources (desalinated water and City's groundwater and surface water supplies) with respect to recommended sodium ingestion per day for "salt sensitive" and healthy individuals. This tabular comparison is provided for comparison purposes only -- the table shows how much water a person would have to drink, by source, to consume the recommended allowable maximum levels of sodium per day. Sodium is also consumed in food as well, thus the numbers presented in the tabular summary need to be interpreted in that context.

Table 3.7-1. COMPARISON OF PREDICTED DESALINATED WATER QUALITY WITH CITY'S WATER SUPPLIES (1989)

Parameter	Units	Maximum Contaminant Level[a]	Surface Water		Groundwater		Predicted Desalinated Water Quality[b]		
			Range	Average[a]	Range	Average[a]	10° C	15° C	19° C
CLARITY									
Turbidity (Treated)	NTU	0.5	0.1-0.5 0.2	0.06-0.3	0.2		<0.5	<0.5	<0.5
ORGANIC CHEMICALS									
Total Trihalomethanes	ppb	100	ND[c]-85	55	ND-12	3	<25	<25	<25
INORGANIC CHEMICALS									
Heavy Metals									
Aluminum	ppb	1000	410-1000	360	ND-490	11	<100	<100	<100
Arsenic	ppb	50	ND-8	7	ND-8	5	<5	<5	<5
Barium	ppb	1000	97-140	118	28-300	140	<100	<100	<100
Cadmium	ppb	10	ND	ND	ND	ND	<1	<1	<1
Chromium	ppb	50	ND-1	ND	ND-2	1	<5	<5	<5
Lead	ppb	50	ND-4	ND	ND-4	ND	<5	<5	<5
Mercury	ppb	2	ND	ND	ND-0.3	ND	<0.2	<0.2	<0.2
Selenium	ppb	10	3-11	7	ND-16	5	<5	<5	<5
Silver	ppb	50	ND	ND	ND-2	ND	<5	<5	<5
Minerals									
Fluoride	ppm	2.0	0.60-0.62	0.61	0.35-0.62	0.44	ND	ND	ND
Nitrate (as No_3)	ppm	45	ND-0.50	0.14	ND-19.4	5.4	ND	ND	ND
SECONDARY STANDARDS (Aesthetic Standards Established by the State of California, Department of Health Services)									
Physical Parameters									
Color	Hazen	15	<5-10	<5	<5-50	10	<3	<3	<3
Odor-Threshold	Odor	3	4-8	5	ND-12	5	<3	<3	<3
Chemical Parameters									
Chloride	ppm	500	19-32	30	61-222	117	163	199	230

Table 3.7-1. COMPARISON OF PREDICTED DESALINATED WATER QUALITY WITH CITY'S WATER SUPPLIES (1989) (concluded)

Parameter	Units	Maximum Contaminant Level[a]	Surface Water		Groundwater		Predicted Desalinated Water Quality[b]		
			Range	Average[a]	Range	Average[a]	10° C	15° C	19° C
Copper	ppm	1.0	ND-0.03	0.01	ND-0.26	0.03	<0.003	<0.003	<0.003
Sulfate	ppm	500	296-440	361	74-338	154	10	12	14
Zinc	ppm	5.0	ND-0.01	ND	ND-0.22	0.03	1	1	1
Mineral Quality									
Specific Conductance	μ mho/cm	1600	910-1140	1030	730-1590	932	725	856	970
Total Dissolved Solids	ppm	1000	624-896	700	460-1072	656	340	403	456
UNREGULATED CONSTITUENTS									
pH	Scale	NS[d]	8.1-8.5	8.3	6.7-7.5	7.4	8.2	8.2	8.2
Hardness (as $CaCO_3$)	ppm	NS	396-520	455	298-648	410	26	34	38
Alkalinity (Total as $CaCO_3$)	ppm	NS	163-262	200	140-403	256	34	34	35
Sodium	ppm	NS	56-61	55	46-92	59	111	135	150
Potassium	ppm	NS	2.7-3.6	3.0	1.5-3.6	2.3	5	6	7
Magnesium	ppm	NS	48-52	50	23-108	44	5	7	8
Silica (as SiO_2)	ppm	NS	5.8-9.6	8.1	28.6-44.3	36.1	<1	<1	<1

[a] Source: City of Santa Barbara. 1989. Annual Water Quality Report.
[b] Source: Ionics, Incorporated. 1990.
[c] ND = Not detected.
[d] NS = No Standard.

Table 3.7-2. COMPARISON OF LEVELS OF SELECTED CONSTITUENTS BETWEEN DESALINATED WATER AND CITY'S TRADITIONAL SUPPLIES

Constituent	Maximum Contaminant Level (ppm)	Predicted Desalinated Finished Water Quality (ppm)	City Surface Water Supply Quality in 1989 (ppm)	City Groundwater Supply Quality in 1989 (ppm)
Chloride	500	163-230	19-21	61-222
Zinc	5	1	Not Detected - 0.01	Not Detected - 0.22
Sodium	NS[a]	111-150	56-61	46-92
Potassium	NS	5-7	2.7-3.6	1.5-3.6

[a] NS = No standard established.

Table 3.7-3. COMPARISON OF SODIUM LEVELS BETWEEN DESALINATED WATER AND CITY'S TRADITIONAL SUPPLIES

Water Supply	Sodium Range (mg/l)	Gallons of Water Containing Listed Amount of Sodium	
		<2 grams/day[a]	3 grams/day[b]
Desalinated Water	111-150[c]	3.52-4.76	5.28-7.13
City Groundwater	46-92[d]	5.74-11.48	8.61-17.23
City Surface Water	56-61[d]	8.66-9.43	12.56-14.15
Softened Groundwater	**137-299[e]**	**1.77-3.86**	**2.65-5.78**
Softened Surface Water	**182-240[e]**	**2.20-2.90**	**3.30-4.35**

Note: This table presents information regarding the sodium content of the desalinated water versus the City's traditional water supplies. The listed gallons of water indicate how much water would have to be consumed daily to ingest the maximum recommended levels of sodium. Sodium is also present in food, thus these numbers are presented for comparison purposes only.

[a] Level recommended for "salt sensitive" individuals (Nutrition Committee, 1988; Subcommittee on Nonpharmacological Therapy of the 1984 Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure).
[b] Level considered to be acceptable for healthy individuals (Nutrition Committee, 1988; Subcommittee on Nonpharmacological Therapy of the 1984 Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure).
[c] Source: Ionics, Inc. (1990).
[d] Source: City of Santa Barbara, Annual Water Quality Report (1989).
[e] Source: Calculated values based on 100 percent conversion of hardness (in listed supplies) to sodium by ion exchange softening.

Since all applicable drinking water standards will be met, no significant adverse effects to health will occur.

3.7.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable.

3.7.3.1 Accidental Chemical Spill/Release. Measures for mitigating potential effects on human health due to an accidental chemical release are the same as those discussed in Section 3.6.4 in the Risk of Upset section. In summary, the measures will help prevent an accident from occurring in the first place and appropriate monitoring equipment will be in place to detect abnormal conditions and/or an accidental release. In addition, emergency response plans will be in place to respond properly if an accident should occur. Residual impacts will be insignificant.

3.7.3.2. Finished Water Quality. The finished water from the proposed desalination facility will be of high quality. The water produced by the proposed desalination facility will meet all currently identified water quality standards; therefore, no mitigation measures are deemed necessary to protect human health related to potable water quality. Certain sensitive individuals with heart and/or kidney ailments may wish to consult their physicians regarding the levels of chloride, sodium, and potassium in the finished water since they are higher than the City's traditional surface and groundwater supplies. The predicted levels of chloride are still less than 50 percent of the secondary drinking water standard.

3.8 VISUAL AESTHETICS

3.8.1 Environmental Setting

3.8.1.1 Present Setting. At the present time, the proposed desalination plant site, located between Highway 101 and Yanonali Street, and between the Santa Barbara Rescue Mission and the City Corporation Yard Annex, is without permanent structures. The unpaved site is used, however, for open temporary storage of wooden piers (for use at Stearns Wharf), tree and brush cuttings from City parks and streets, and other miscellaneous materials. The cuttings are stored both on the

ground and in large blue trash containers that are used to haul the material to a disposal site. The site is surrounded by a chain link fence on three sides with a wall on the west side and has a large chain link gate onto Yanonali Street. The present condition of the site could be considered to be unattractive.

The adjoining City Corporation Yard is relatively new with several attractive buildings. It has some immature landscaping on the north side which will eventually hide its otherwise visible open storage areas from freeway users. South of Yanonali Street is the City El Estero WWTP complex. It has attractive concrete buildings and mature landscaping.

Near the east end of the desalination plant site is the temporary Salsipuedes Street freeway offramp and east of that is a small vacant area. Both this vacant area and the temporary offramp area would be used for the desalination plant for both the proposed 10,000 AFY and alternate 7500 AFY plant sizes. The east end of the site is directly adjacent to the existing wall on the west side of the Rescue Mission. The Rescue Mission itself is an attractive and relatively new facility with two Mission Style architecture buildings on about one acre of land. There are several windows on the west end of the Rescue Mission which overlook the proposed desalination plant site.

The other facilities in the vicinity of the site are typical of much of the City's industrial area and without aesthetic appeal. The freeway itself, in its current and ultimate configuration, is four to twelve feet in elevation above what will be the final grade of the desalination plant site. For this reason, the site is readily visible from the freeway, especially to eastbound traffic.

Across the freeway to the north, most of the buildings are one story. However, an attractive two story office building is also located in the area about 300 feet north of the desalination plant site.

The pump station and chemical facility are proposed to be located on the southeastern corner of the existing El Estero WWTP complex. This half acre site is located about 300 feet north of the Southern Pacific Railroad tracks and is surrounded by industrial uses including the City Fire Department training complex.

The present setting of the proposed seawater intake pipe installation area of the beach is typical of Santa Barbara's attractive East Beach. The beach crossing site would adjoin the City bike

path and Chase Palm Park. The nearest point of the pipeline construction site will be about 150 feet south of the south side of Cabrillo Boulevard and visible from that scenic highway.

The only visible offshore aspect of the proposed project will be a cylindrical buoy located about 2500 feet offshore marking the location of the seawater intake facility. The intake structure will normally be about nine feet below the surface of the ocean. The purpose of the buoy will be to warn boaters away to prevent damage to the intake facility. In addition, during the construction period, there will be a barge anchored offshore for the purpose of setting in place the seawater intake facility at the seaward end of the intake line.

3.8.1.2. <u>Applicable Policies</u>. The visual aesthetics of the City of Santa Barbara in general, and especially the Coastal Zone, are of great value to both residents and visitors. This fact is cited in the Coastal Plan of the City of Santa Barbara. The "Visual Quality" section of that document places the vicinity of the desalination plant site in Component 5: Santa Barbara Street to Punta Gorda Street. Section 30251 of the Coastal Act states in part, "The scenic and visual qualities of the coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed ... to be visually compatible with the character of surrounding areas...". The City's Conservation Element of the General Plan sets forth certain goals which include: "Protect and enhance the scenic character of the City", and "Protect open space areas from the type of development which would degrade the City's visual resources". The Scenic Highways Element establishes Cabrillo Boulevard (e.g., where the beach crossing operation would take place) as a City Scenic Highway to be protected from visual degradation. Any development which is inconsistent with these goals and policies may be found to have a significant impact on Visual Aesthetics.

3.8.2 <u>Environmental Impacts</u>

3.8.2.1 <u>Description of Project Facilities</u>. The desalination plant is currently expected to be installed with no permanent above ground facilities (other than concrete slabs). The temporary reverse osmosis and pump facilities will all be located inside of two-axle trailer vans. Under the proposed 10,000 AFY scenario there will be 16 pairs of trailers, each 14-feet high, about 40-feet long, and 8-feet wide (12 pairs of trailers for the 7500 AFY alternate). These trailers will be placed on concrete slabs and will occupy about two-thirds of the south (Yanonali Street) side of the site. The rear one-third of the site (north and freeway side) will be occupied by 18 primary and secondary filter tanks.

The filter tanks will be mounted horizontally on concrete piers. They will be about 40-feet long, 8-feet in diameter, and the tops will be 10-feet above ground level. One backwash clarifier will be 20-feet high and 16 feet in diameter and be located in the northeast corner of the site. There will also be miscellaneous other smaller tanks, transformer boxes (mounted on the ground), and various pipelines connecting the processing facilities. In the center of the site there will be several paved driveways and a parking area for about six vehicles. Plans call for a masonry wall to match the abutting Corporation Yard wall facing Yanonali Street with ornamental landscaping and a 6- to 8-foot high chain link fence on the freeway side of the project site. Landscaping will be irrigated with reclaimed water wherever possible, as determined by the Community Development Director. Mature and/or fast growing trees will be planted for screening purposes. The proposed color of the trailer vans and tanks will be compatible with the adjacent Rescue Mission and El Estero WWTP. Figure 3.8-1 is an artist's rendering of the completed plant from an elevation of about 100 feet above the abutting freeway.

The proposed electrical substation will be located behind an existing wastewater treatment plant chain link fence on the south side of Yanonali Street, and substation facilities will extend to about 16 feet above the ground; two receiving poles will be 22 feet tall. In addition, a 66 kV line will be put in place along Yanonali Street on one or two poles between the intersection of Salsipuedes and Yanonali streets and the substation.

The highest part of the pump station and chemical facility will be about 15-feet high with security fencing and visual screening consisting of landscaping. The facility will occupy about 12,000 square feet of space.

The intake pipe installation on the beach will last about 2 months and will be characterized by a 10 foot deep by 8 foot wide (bottom) by 80 to 100 foot long trench where the old El Estero WWTP outfall line is located. Viewers will temporarily see piles of excavated sand, stored polyethylene pipe to be used to sleeve the existing old wastewater outfall line, and various kinds of construction equipment and vehicles. The site will be surrounded by a temporary fence to assure security and safety.

For a short period of time during the construction period, it will be necessary to anchor a barge in the vicinity of the end of the seawater intake line for the purpose of setting the intake facility in place. A cylindrical lighted intake marker buoy which will stand eight to twelve feet above the water

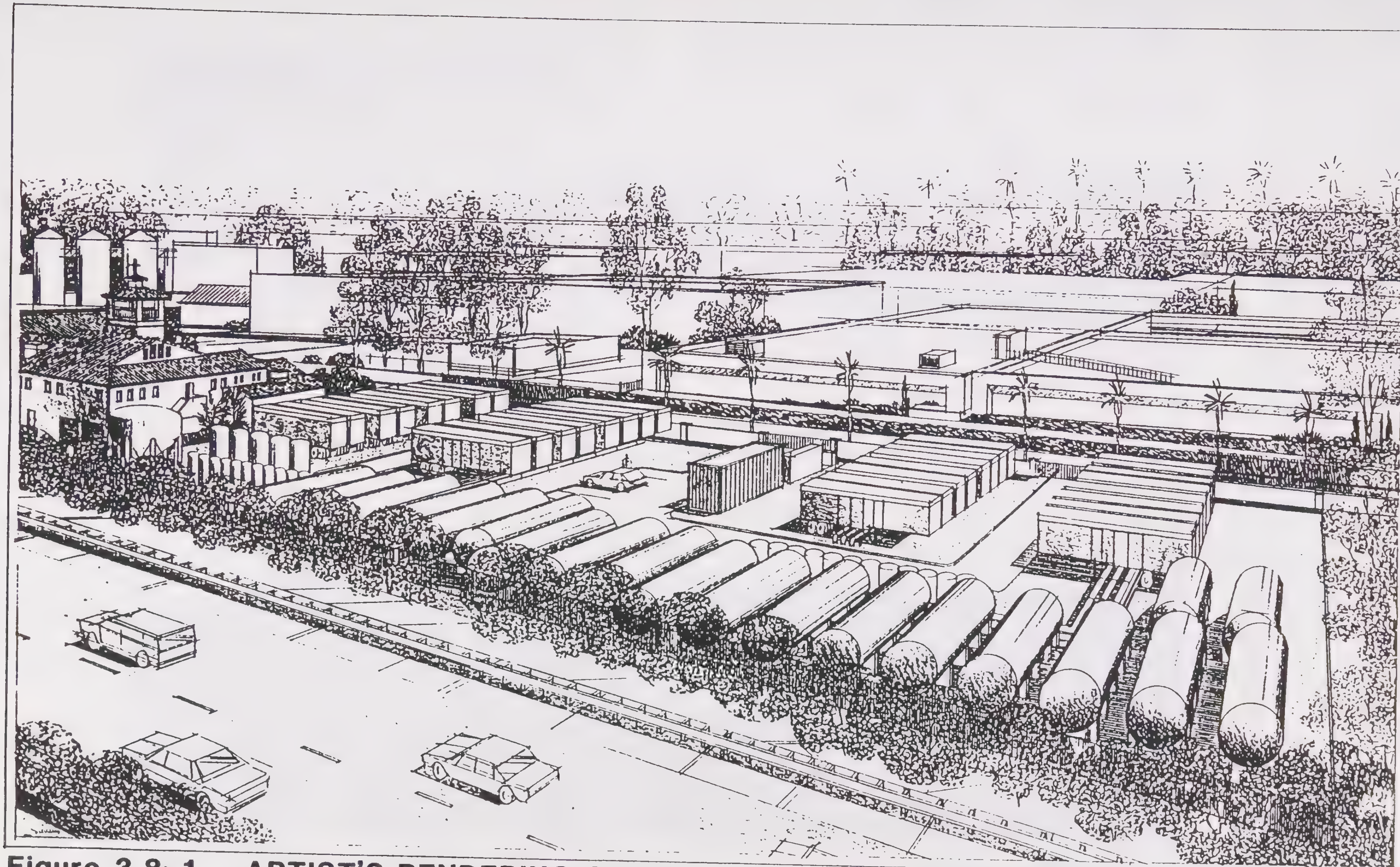


Figure 3.8-1. ARTIST'S RENDERING OF PROPOSED DESALINATION FACILITY

will be secured at that location permanently and will have warning signs to keep the area clear of pleasure and fishing boat anchors and moorings.

3.8.2.2 Vantage Points. The proposed desalination plant will affect the visual environment at four locations: 1) the plant site on Yanonali Street (including the electrical substation and overhead utility lines); 2) the pump station at the wastewater treatment plant; 3) the intake line installation area on East Beach; and 4) offshore at the seawater intake barge (temporary) and marker buoy. Each of these locations can be observed from several vantage points.

The desalination plant and, to a lesser degree, the electrical substation will be observed by users of Highway 101 freeway. Presently, the view of the small plant site from the freeway is very brief for passing vehicles. Once the freeway work is completed by CalTrans, traffic speeds are expected to increase to 55-60 miles per hour and the duration of view from the freeway will be reduced further. The annual average daily traffic on the freeway at this location in 1989 was about 85,000 (CalTrans, 1990). The difference between the finish grade of the freeway and the project site will be approximately 3.9 feet at the northwest corner, and 11.9 feet at the northeast corner of the site (Viettone, 1990). Figure 3.8-2 is a view of the plant site taken from the south edge of the freeway which is at its present and ultimate elevation.

Users and employees of the Santa Barbara Rescue Mission will see the proposed project because of its proximity to the desalination facilities. Figure 3.8-3 is a photo of the project site taken from the south side of Yanonali Street and includes the Rescue Mission. On a broader basis, the plant site can be observed by residents of the Santa Barbara Riviera and Eucalyptus Hill communities because of their higher elevation. These residential communities are located between one and two miles north and east of the plant site. Figure 3.8-4 is a photograph of the beach front and Pacific Ocean as seen from the Riviera area. The plant site area is shown on the photograph with an arrow.

The pump station site can be viewed by users of the surrounding industrial properties and, until landscaping is in place, possibly from the proposed multi-story Park Plaza development. Figure 3.8-5 is a photograph taken toward the pump station site from the proposed Park Plaza property.

The seawater intake pipe installation area on the beach will be temporarily visible from Chase Palm Park, East Beach, and the bike path. In addition, it will be temporarily visible to Sunday Arts and

Figure 3.8-2. CITY CORPORATION YARD AND DESALINATION PLANT SITE, LOOKING SOUTHEAST FROM SOUTH SIDE OF HIGHWAY 101

Figure 3.8-3.
DESALINATION PLANT SITE AND SANTA BARBARA RESCUE MISSION, LOOKING NORTHEAST FROM SOUTH SIDE OF YANONALI STREET

Figure 3.8-4.
VIEW FROM THE RIVIERA OF THE PACIFIC OCEAN AND SANTA BARBARA SHORELINE,
DESALINATION PLANT SITE IS INDICATED BY ARROW

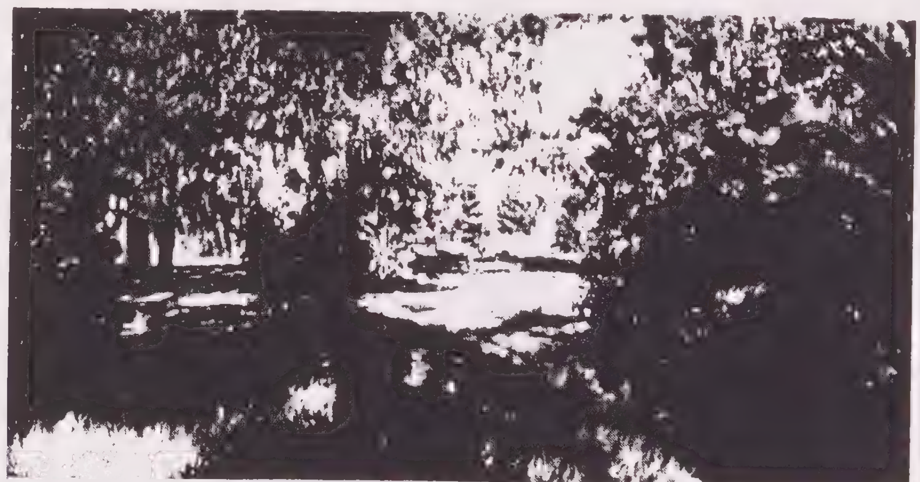


Figure 3.8-5.
FUTURE SITE OF PARK PLAZA,
LOOKING NORTH TOWARD SITE OF PROPOSED PUMP STATION AND CHEMICAL FACILITY

Crafts Show visitors along Cabrillo Boulevard on days that it extends that far east from Stearns Wharf. Another vantage point will be from Stearns Wharf, about 1,500 feet to the west. Figure 3.8-6 is a photo of the portion of East Beach which will be used to install the seawater intake line sleeve.

The only vantage points for the temporary seawater intake facility placement barge and the buoy which will mark the location of the underwater seawater intake will be Stearns Wharf and East Beach. Figure 3.8-7 is a photo of the East Beach area where the intake line construction work will take place, as viewed from Stearns Wharf toward the northeast.

3.8.2.3 Visual Effects of Project Elements. The view of the desalination plant from the freeway will include the tops of the primary and secondary filter tanks which will be about 16 feet high. At the west boundary of the plant site, the freeway will be only about 4 feet above the finished level of the plant site. Adding about 3 feet for the height of a freeway user's eye above the freeway, the tops of the trailer vans and filter tanks will be visible above the planned vegetative screening. The desalination plant site is surrounded primarily by industrial uses and will be visually compatible with the industrial zoning and general character of the surrounding area.

The proposed new electrical substation, to be located at about the center of the wastewater treatment plant Yanonali Street frontage, will probably not be noticeable from the freeway. This R13-7
is because of its greater distance from the freeway (about 350 feet), the intervening Corporation Yard and desalination plant, and its much smaller size. The 66 kV power line required between Salsipuedes Street and the new electrical substation will be seen from the freeway and the Rescue Mission. Although they are considered to be unsightly, overhead utility lines exist in older neighborhoods and in industrial areas and are judged to not be a significant impact here.

Views of the desalination plant from the Rescue Mission will be apparent. Views from the second story windows will be affected, although all plant facilities except the processing tank will be below eye level. A proposed higher wall on the east boundary will help block views of the site from the first story windows. The second story area is used as dormitory facilities. These facilities are used primarily at night. The City will require implementation of standard light and glare shielding measures to eliminate potential adverse effects related to night lighting and glare. No significant impacts are expected to occur.

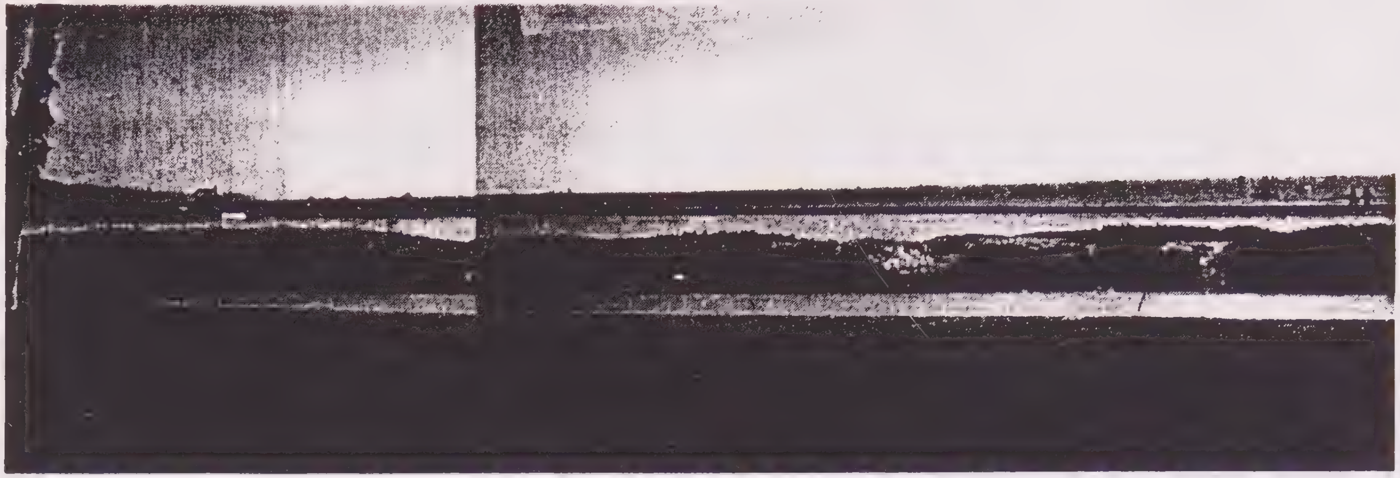


Figure 3.8-6.
CHASE PALM PARK, LOOKING SOUTHEAST TOWARD PROPOSED BEACH CONSTRUCTION SITE

Figure 3.8-7.
VIEW FROM STEARNS WHARF OF CHASE PALM PARK AND SITE OF PROPOSED BEACH CONSTRUCTION

Because of the distance of one to two miles, residents of the Riviera and Eucalyptus Hill communities will probably find the desalination plant to be generally unnoticeable from their vantage points, since the desalination plant colors will be compatible with the surrounding development.

The proposed pump station could be most readily viewed by users of the surrounding industrial facilities. The pump station will be located about 350 feet from the north side of the proposed Park Plaza development which is on the south side of the Southern Pacific Railroad tracks. Intervening buildings and vegetation will greatly reduce views from the Park Plaza area.

The temporary intake sleeving operations will be most obvious to users of East Beach, Chase Palm Park, users of the bike path, and, to a lesser extent, users of Cabrillo Boulevard. To a very minor extent, it will temporarily obscure views of the ocean and the east and west coastal areas, including Stearns Wharf. This minor impact will also affect persons who visit the Sunday Arts and Crafts Show.

Persons who visit or work at Stearns Wharf (about 1,500 feet away) will also be able to see the beach sleeving operations and will have their view of East Beach interrupted to a lesser extent. Residents of the Riviera and Eucalyptus Hill areas live far enough away from the beach sleeving site that there will be little if any disruption of their views of the beach and ocean.

The sleeving operations and accompanying disturbance of East Beach are judged to have an adverse, but insignificant and temporary impact on the visual aesthetics of the East Beach area.

The proposed use of a barge to accommodate the placement of the seawater intake facilities during the construction period and the later placement of a warning buoy should create only very minor interruption of ocean views from the East Beach Area and Stearns Wharf. Other barges have historically been anchored in the same general vicinity. Considering the temporary nature of the use of the barge and its proposed distance from the shoreline, it and the permanent marker buoy are not considered to have a significant impact on visual aesthetics of the East Beach and Stearns Wharf vantage points.

3.8.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no significant adverse effects are predicted, the numbered mitigation measures presented below are recommended to further mitigate impacts.

Ionics will effectively screen the view of the desalination plant from the freeway with vegetation such as eucalyptus, oleanders, or other fast growing vegetation.

- 3.8-1: It is recommended that the City and Ionics coordinate with CalTrans to cooperate in the development of adequate freeway planting to help screen the desalination plant site.

The 66 kV electrical substation proposed to adjoin Yanonali Street in front of the wastewater treatment plant complex will be screened from view from Yanonali Street with planting such as oleanders or an architecturally compatible wall (e.g., concrete) between the existing chain link fence and the street.

Significant effects to visual aesthetic resources are not expected assuming project facilities are made compatible with their surroundings and visually screened, as practicable.

3.9 RECREATION

3.9.1 Environmental Setting

The assessment of potential desalination project impacts on recreation resources is focused on construction activities on the beach and offshore since these are the only aspects of the proposed project which are considered to have the potential to adversely affect recreation.

3.9.1.1 Setting. The operation to install a pipeline liner into the former outfall line will take place on the beach at Chase Palm Park. Chase Palm Park is a 10-acre beach park with one mile of ocean frontage. It stretches along Cabrillo Boulevard between the East Beach parking lot to the east and

Stearns Wharf to the west. The Cabrillo walkway/bikepath extends the length of the Park. The Park is used for a number of recreational pursuits, including biking, jogging, sunbathing, swimming, oceanviewing, picnicking, and soccer. Additionally, people are drawn to Palm Park for the Arts and Crafts Show held there every Sunday. At the west end of the Park is a small community educational and meeting facility, the Palm Park Cultural Center, and a 280-space parking lot. Parking is also available along Cabrillo Boulevard. Heaviest use of the Park occurs on the weekends, particularly on Sunday during the Arts and Crafts Show, which is a popular tourist attraction. Lack of sufficient parking to meet weekend demand can be a problem during the summer months.

3.9.1.2 Policy Framework. The diverse recreational opportunities available along the Santa Barbara coastline are highly valued by both local residents and visitors. Policies of the California Coastal Act and the Santa Barbara Local Coastal Plan identify the importance of protecting access to the beach for coastal recreational activities. Coastal Act Sections 30001.5 and 30210 declare that public access, and recreational opportunities be maximized. Coastal Act Section 30211 requires that development shall not interfere with the public's right of access to the sea and Sections 30220 and 30221 protect coastal areas for recreational use. City policy is reflected in the General Plan which states, "The relationship of Santa Barbara to the ocean must remain open and free of impediments in order to permit the maximum enjoyment of the natural qualities available".

3.9.2 Environmental Impacts

3.9.2.1 Onshore Effects. A short term minor impact on the quality and quantity of recreational opportunities will result from the pipeline-sleeving construction activities to be conducted on the beach at Chase Palm Park. Installation of the pipeline liner will entail digging a trench in the sand approximately 10 feet deep, 8 feet wide (at the bottom with angled side slopes), and 80 to 100 feet long. In addition, an equipment storage/marshalling area will also be required; it is currently anticipated that a total area of about 100 feet by 40 feet should be sufficient for both liner installation and marshalling/equipment storage. When the lining operation is complete after two months of construction, the trench will be filled using the beach sand that was originally removed. No long term impact will occur.

The operation will take place at the site of an existing concrete weir box (manhole) on the beach. The weir box/manhole is located near the soccer field at the western end of the Park, about 140

feet south of the jog in the bikepath. The beach is approximately 300 feet wide at this point. Beach width will be sufficient to allow for lateral access along the beach during construction.

The lining procedure is currently anticipated to require the use of a fusion machine for joining the 40 foot segments of pipe, one bulldozer, one backhoe, one crane, and 20 trucks. Construction operations, including storing and combining the pipe sections, will involve additional beach area surrounding the actual excavation. The entire construction site may be fenced and closed to the public or, at a minimum, the trench will be fenced for reasons of public safety.

A portion of the parking lot at the western end of Chase Palm Park will be utilized as the staging area for the off-loading of trucks. Trucks are expected to approach and enter the parking lot from Santa Barbara Street, thus avoiding travel along Cabrillo Boulevard. Trucks designed for beach conditions will transport pipe and materials across the bikepath to the construction site. When it is necessary to cross the bikepath, flagmen will be provided to ensure the safety of walkers, joggers, and bicyclists. Flow along the bikepath could be restricted at these times.

The overall construction schedule indicates that beachwork will commence at the beginning of the fourth month after the notice to proceed is received and will continue through the end of the fifth month. If the notice to proceed is received on July 1, 1990, beachwork will start in October and be completed by the end of November. A one or two month delay in the schedule will still allow construction to take place in the off-season.

The area required for construction on the beach is relatively small compared to the large beach and park area. Off-season beach uses will be displaced from the small construction area by the pipeline sleeving operation during the two-month period of construction. Some disruption in the use of the bikepath could be expected at intermittent intervals. In addition, the number of parking spaces available in the Palm Park lot will be reduced during construction. As mitigating factors, construction will be accelerated to the extent possible and will occur during the winter season, the time of lowest recreational demand. Adjacent beaches will be uncrowded and able to absorb the displaced demand. Parking capacity, although reduced, will remain adequate for this time of year.

Given the small size of the affected beach area and the temporary off-season nature of the disruption to recreation when demand is lowest, construction-related impacts on recreational activities are judged to be insignificant.

3.9.2.2 Offshore Effects. The subsurface intake structure and associated surface marker buoy, which will be located within 1,500 feet of Stearns Wharf, may present a navigational hazard to boaters. Due to the proximity of the harbor, boats frequently transit the area.

The dual intake structure will extend either 19 feet or 15 feet above the sea floor depending on whether the plant has a capacity of 10,000 AFY, or 7500 AFY, respectively. The structure will be placed in approximately 30 feet of water, and therefore the top of the intake would normally be about 11 feet (10,000 AFY plant) or 15 feet (7500 AFY plant) below the surface of the water. The clearance depth will decrease at low tide or during minus tides by at most two feet (i.e., to as little as 9 feet). At a depth of as little as 9 feet the structure will not, in general, pose a danger to most recreational boaters. Smaller boats that are designed for harbor use generally have shallow drafts of less than 9 feet. The larger offshore supply vessels tend to avoid this mooring area. However, for safety purposes the intake structure will be marked by a standard navigational buoy, which is likely to be a tall, cylindrical-shaped buoy, yellow in color, and lighted. It will be added to the navigation charts of the area. With the buoy serving as a warning to boaters, the potential impact on offshore recreation is considered to be insignificant.

The proposed 10,000 AFY project will potentially include a submerged electric pump on the intake. According to the manufacturer, the pump will be inaudible below or above water, thus recreation impacts related to noise are not anticipated.

3.9.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no significant adverse effects are predicted, the numbered mitigation measures presented below are recommended to further mitigate impacts.

The following measures are recommended to lessen potential project-related adverse impacts to recreation:

- 3.9-1: All construction on the beach shall be required to take place during the off-season (October through February), if possible.

- 3.9-2: The excavation on the beach shall be enclosed within a fence for public safety reasons.

- 3.9-3: When construction vehicles must cross the bikepath, flagmen shall be provided for the safety of pedestrians and bicyclists, and to minimize the disruption in use of the bikepath.

- 3.9-4 The subsurface intake structure shall be marked with a standard lighted navigational buoy to alert boaters to the underwater obstruction.

3.10 CULTURAL RESOURCES

This section presents a summary of the Phase I Cultural Resource Evaluation. Refer to Appendix B of this EIR for the Complete Phase I Report. Cultural resources identified in the proposed project area during the background record search for the Phase I Cultural Resource Evaluation include the El Estero Racetrack (1886-1903) and the El Estero Racetrack Grandstand. Both sites were indicated on historic maps from 1886 to 1898 within the limits of the Agricultural Park established in the summer of 1886 (Tompkins, 1989). The potential significance of each resource is described in the Significance Evaluation section of Appendix B.

No previously recorded prehistoric sites were located within the immediate environs of the project area. No significant historic or prehistoric cultural resources were identified during a field reconnaissance of the proposed project facility locations in November 1990 by a professional archaeologist.

3.10.1 Environmental Setting

3.10.1.1 Onshore Components.

Desalination Plant Site. The proposed desalination plant site is located on a vacant 1.5 acre lot between Yanonali Street and U.S. Highway 101, immediately north of the existing El Estero WWTP. The ground surface is covered by imported fill, sand, and gravel. Historic documents indicate that the landform within this area was an "estero" and was seasonally or permanently inundated by water. Today these landforms are currently buried by 3 to 5 feet of fill material.

Electrical Substation. The proposed electrical substation is located in the northcentral portion of the existing WWTP immediately south of Yanonali Street. The land form and environmental conditions are the same as those described above for the proposed desalination plant site.

Pump Station and Chemical Treatment Area. The proposed pump station/chemical treatment area is located in the southeast corner of the WWTP. The proposed location for the desalination pump station and chemical treatment area is immediately east of the existing reclaimed water pump station facility.

The western portion of the proposed facility area is covered by dense vegetation (ice plant). The eastern portion of the proposed facility area is a vacant yard. The ground surface represents imported fill, sand, and gravel.

Onshore Pipelines. Intake, brine discharge, and chemical feed pipelines will run south from the desalination plant site, under Yanonali Street and through the existing WWTP to the pump station/chemical treatment area. The pipeline corridor runs west to the northwest corner of the WWTP, south along the east side of the Laguna Channel, east across the WWTP, and southeast to the pump station/chemical treatment area. The intake line runs south from the pump station to the existing weir box at East Beach and from the weir box 2500 feet south to the seawater intake. A brine discharge line will run west from the pump station area and connect to the existing 48-inch diameter sewage outfall line near the southwest corner of the existing WWTP. The majority of the proposed corridor is under paved surfaces.

Proposed onshore pipelines traverse the existing WWTP. The entire WWTP facility and existing landform represent soil imported to fill in the historic "estero."

3.10.1.2 Offshore Components.

Seawater Intake. The seawater intake for the proposed facility will consist of two intake assemblies each measuring approximately 22 feet in diameter located approximately 2500 feet offshore of the existing weir box south of Cabrillo Boulevard. The intake assemblies will be attached to the 36-inch diameter offshore intake pipeline within the 42-inch abandoned outfall line.

Visual inspection of the exterior of the abandoned outfall line (Oceaneering International Inc., 1990) indicates that the 42-inch line is on the surface of the ocean bottom at the approximate location of the proposed intake assembly installation.

Subsea Intake Pipeline. Visual inspection of the exterior of the abandoned outfall line (Oceaneering International Inc., 1990) indicates that it is buried beneath sand and armor rock.

Brine Discharge Pipeline. The brine discharge pipeline will connect to the existing 48-inch sewer outfall line that runs from the southwest corner of the existing WWTP to a point about 8700 feet offshore. There is no proposed offshore construction component.

3.10.2 Environmental Impacts

3.10.2.1 Onshore Components.

Desalination Plant Site. Grading will consist of removing and recompacting surface soil (approximately 2000-4000 cubic yards) to an average depth of 1 to 2 feet for site preparation. Soils investigations revealed estuary deposits buried beneath 3 to 6 feet of compacted fill.

Given the fact that any potentially significant cultural resources within this portion of the project area are buried beneath 3 to 6 feet of fill, direct or indirect adverse impacts as a result of construction activity are considered minimal.

Electrical Substation. Construction of a 60 foot by 35 foot electrical substation in the north central portion of the existing WWTP will result in moderate surface disturbance. No potentially significant cultural resources were located during the background research or field reconnaissance in this portion of the project area. Historic documentation indicates this area fell within the infield of the El Estero Racetrack. With adoption of the recommended mitigation measures, adverse impacts as a result of construction activity are expected to be minimal.

Pump Station and Chemical Treatment Area. Construction of the pump station will require the excavation of approximately 2000 cubic yards of soil during the grading and subgrade operations. The total area for the station will be approximately 25 feet by 100 feet. Within the pump station area, surface soil will be recompacted. Excavation of four pump tubes (9 feet in diameter and 40

feet deep) will also occur within this area. Chemical treatment facility construction will also require excavation and recompaction of surface soil.

No potentially significant cultural resources were located during the background research or field reconnaissance in this portion of the project area. Historic documentation indicates this area also fell within the infield of the El Estero Racetrack. No adverse impacts are expected to occur.

Onshore Pipelines. Construction within the onshore pipeline corridors will consist of excavation and installation of saltwater intake, brine discharge, and chemical feed lines to and from the desalination facility. Pipelines will be buried at depths ranging from 2 feet to 12 feet below the existing ground surface.

No potentially significant cultural resources were identified during the field survey of the 50 foot wide onshore pipeline corridors. Historic background research indicates that the brine discharge pipeline may cut through the surface of the former El Estero Racetrack near the southwest corner of the existing WWTP facility (Figure 1-1). A plot of the location of the old racetrack and grandstand indicate that the proposed point of intersection between the brine discharge line and the existing 48-inch sewage outfall line falls in the general vicinity of the grandstand.

There is potential for direct significant impacts to remnants of the racetrack course and grandstand during onshore pipeline installation in the vicinity of the southwest corner of the existing WWTP.

3.10.2.2. Offshore Components.

Seawater Intake. Construction activities during installation of the seawater intake will consist of sleeving the abandoned outfall line with a polyethylene liner insert and connecting it to the two intake structures 2500 feet south of the weir box on the beach near Cabrillo Boulevard. The intake structures will be set on concrete bases (22 feet in diameter) and secured to the ocean floor with pilings. With the exception of the pilings, only moderate seafloor disturbance will occur during the intake structure installation.

Subsea Intake Pipeline. The proposed 36 inch intake pipeline will be sleeved into the 42-inch abandoned outfall line from a point near the existing onshore weir box south of Cabrillo

Boulevard. The pipe is buried beneath sand and armor rock for the offshore portion from the weir box to the proposed intake structure location.

No potentially significant cultural resources were located in the offshore portion of the project area during the background research. Since the deposition of sand covering the pipeline postdates its installation in 1925, the potential for adverse impacts to previously unidentified cultural resources during the removal of the sand is considered minimal.

Brine Discharge Pipeline. The brine discharge pipeline will feed into the existing 48 inch sewage outfall line onshore. There is no offshore construction component for the brine discharge pipeline.

3.10.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable. Although no unavoidable adverse significant effects are predicted, the numbered mitigation measures presented below are recommended to reduce potentially significant impacts to cultural resources to insignificant levels.

3.10.3.1 Onshore Components. Since the entire onshore portion of the project area is covered by 3 to 6 feet of fill, the possibility exists that buried cultural resources not discovered during the field reconnaissance may be encountered during construction activities.

- 3.10-1: Due to the potential to encounter buried cultural resources, all contractors and construction personnel shall be alerted to the sensitivity of this area. If cultural features are exposed or suspected, work shall be promptly halted and a professional archaeologist and the Environmental Analyst will be consulted.

Desalination Plant Site. Background research indicates the eastern portion of the El Estero Racetrack formerly ran through the proposed desalination plant site. Intact, identifiable remnants of the track potentially exist below surface fill (Background Research Section, Appendix B).

- 3.10-2: For any excavation to a depth greater than 2 feet below surface, an archaeological monitor shall be retained to identify any track remnants or associated deposits. The archaeological monitor shall be given the right to halt or redirect grading/excavation for a period that would enable accurate recording of locational information.

Electrical Substation. No mitigation measures are recommended.

Pump Station and Chemical Treatment Area. No mitigation measures are recommended.

Onshore Pipelines. Background research indicates the western portion of the El Estero Racetrack formerly ran across the proposed brine discharge line corridor. Intact, identifiable remnants of the track potentially exist below surface fill (Wilcoxon, 1987). A plot of the location of the old racetrack and grandstand indicate that the proposed point of intersection between the brine discharge line and the existing 48-inch sewage outfall line falls in the general vicinity of the grandstand.

- 3.10-3: An archaeological monitor shall be retained during the excavation of the brine discharge line from a point 300 feet east of the intersection of the existing 48-inch sewage outfall line. The archaeological monitor shall be given the right to halt or redirect grading/excavation for a period that would enable accurate recording of locational information.

3.10.3.2 Offshore Components. The offshore portion of the project area was not included in the initial field survey. The possibility exists that buried, previously unrecorded cultural resources may be encountered during construction activities.

- 3.10-4: Given the potential to encounter unrecorded offshore cultural resources, all contractors and construction personnel for the offshore construction components shall be alerted to the sensitivity of this area. If cultural features are exposed or suspected, work shall be promptly halted and a professional archaeologist and the Environmental Analyst will be consulted.

3.11 ENERGY USE

3.11.1 Issues

The proposed desalination project will require substantial energy to operate and will, therefore, increase demand on existing energy sources. This assessment addresses project energy requirements, energy sources, and energy conservation aspects of the project.

3.11.2 Environmental Impacts

The proposed 10,000 AFY desalination plant project is estimated to consume 8 megawatts (MW) of electrical power which will be supplied by electricity from the Southern California Edison (SCE) grid. The alternate 7500 AFY facility will be expected to require approximately 6 MW of power (i.e., 2 MW per 2500 AFY of capacity). The electrical power will be provided to the desalination facilities at 12 kV via a new 66 kV substation to be constructed on the north-central portion of the El Estero WWTP.

Discussions with SCE's planning department (Terrill, 1990) indicate that SCE's electrical utility system is supplied by the following energy sources (for the 12 months ending June 30, 1990):

- Natural gas = 20.5%
- Nuclear = 17.8%
- Coal = 12.1%
- Oil = 4.1%
- Hydroelectric = 3.5%
- Purchased power = 42%

All of the electrical generation facilities which will serve this project have been approved and permitted, including associated air quality permits, as applicable. The SCE power grid is supplied
R10-3 by the mix of generating sources listed above, some of which do not have associated air emissions
R14-7 (e.g., nuclear and hydroelectric). According to SCE, there is sufficient capacity within their grid to
R16-11 supply 8 MW of electrical power over the five year project life without adding any new generating sources. For reference purposes, SCE has reported that on June 26, 1990 their peak demand was

17,647 MW while SCE's online available resources were 20,731 MW. The 8 MW required for the proposed desalination project equates to about 0.04 percent of the "available resources" and about 0.26 percent of the reserve capacity on this particular day.

Based on data provided by SCE, the following approximate air emissions could theoretically be attributed to generation of 8 MW of electrical power for the desalination project (Franz, 1990):

- SO_x = 26 tons/year;
- NO_x = 37 tons/year; and
- CO_2 = 38,000 tons/year.

These emissions estimates are approximate and do not include out of state emissions that are associated with "baseload" generation which occurs regardless of demand -- i.e., no incremental emissions due to increased demand, according to SCE. The emissions presented above are predicted by SCE to occur in the following areas: Pacific Southwest, North Coast, and Los Angeles Basin. Although these emissions are substantial, they are all associated with existing permitted sources. For simplified comparison purposes, the emissions which could theoretically be attributed to the generation of 8 MW constitute 0.038 percent of the total emissions generated to supply power to the SCE grid (based on % that 8 MW constitutes of 20,731 MW on June 26, 1990).

No significant impacts related to energy use are predicted for the temporary emergency desalination project because energy use is within the existing permitted capacity of power generating facilities supplying power to the SCE grid. These permitted facilities have already undergone environmental review/regulatory permitting and air quality impacts have already been mitigated, as appropriate.

3.11.3 Mitigation Measures

The impact findings in this EIR assume that the applicant proposed measures included in Section 2.0 will be implemented. These measures are discussed herein as applicable.

The proposed desalination project includes the following applicant-committed energy conservation and/or efficiency measures as part of the project design:

- Facility components were located as close to sea level as possible, in part, to reduce energy requirements for pumping;

- Utilization of existing facilities including the abandoned and operating outfalls will save energy during the construction phase;

- Energy recovery turbines will be installed on the RO reject line to recover approximately 30 percent of the overall RO pumping energy; and

- 66 kV substation will be constructed adjacent to the desalination facility site at the El Estero WWTP to increase efficiency in power transfer from SCE facilities.

The proposed project design includes consideration and incorporation of energy conservation measures. The possibility of powering the desalination project by alternate means such as a cogeneration facility and/or natural gas fired turbines was considered but deleted from further consideration due to increased air emissions and permitting constraints. Due to the emergency nature of the proposed project, the City ruled out these alternate energy sources since they could not be approved and permitted within the necessary time frame. Alternate energy sources may be appropriate for a long-term desalination project.

3.12 CONSISTENCY WITH LOCAL PLANS AND POLICIES

The following narrative provides a discussion of the relevant City plans and policies that guide development on the proposed desalination site and the additional areas associated with this project. The project is discussed as being either potentially consistent or inconsistent with the policies outlined below because the Planning Commission will make the final determination of consistency.

3.12.1 Santa Barbara City Charter

The City of Santa Barbara is a Charter City which means that, instead of following all of the general rules established by the State for cities, the City has elected to establish its own set of rules to the degree allowed by State law. The Charter was established by a public vote. Amendments to the

Charter are also subject to approval by a vote of the citizens of Santa Barbara. A brief discussion of pertinent Charter sections follows.

Charter Section 1507. This project is potentially consistent with this Charter provision since this project replaces supplies lost due to the drought.

Charter Section 1508. This project does not involve any increase in habitable non-residential square footage except for a small building which will house the plant offices. Pursuant to Ordinance No. 4628, non-habitable areas used exclusively for regional public utility facilities are not subject to the limitations of Charter Section 1508. The habitable portion of this project would qualify as a Community Priority. In addition, the project will not result in long-term impacts on water, traffic or affordable housing (See Housing Element). This facility is potentially consistent with this Section.

3.12.2 General Plan

The City's adopted General Plan contains a number of Elements that specify policies which relate to the proposed project. A brief discussion of the pertinent Elements follows.

Land Use Element. There are two sections of the Land Use Element: the Land Use Map and the text. The Land Use Map shows that the area of the desalination plant and the pump station and chemical storage facility are designated for Major Public and Institutional Use. The beach area is designated as a Community Park. As the project qualifies as a public use, it is potentially consistent with the Land Use Map. There are no specific goals or policies outlined in the Land Use Element which relate to this project or area. The proposed project is potentially consistent with the Land Use Element.

Housing Element. Housing Element Policy 2.1.0 relates to the proposed project as it addresses the issue of housing demand. Policy 2.1.0 states: "Developments generating new employment from outside the South Coast Area shall be in balance with available housing resources at prices affordable to the projected new employees who will be moving into the area." This Policy has been implemented through an amendment to the Zoning Ordinance (Municipal Code Section 28.87.300), adopted in 1988, which established a Housing Mitigation Program for new non-residential development projects.

The Housing Mitigation Program requires that when a proposed non-residential project generates new employment opportunities that result in the migration of low and moderate income households to the South Coast area creating the demand for two (2.0) or more new affordable housing units, this constitutes a significant adverse impact and must be mitigated. The number of new demand units is determined based on information provided in the project EIR and the application of formulas contained in the Regional Growth Impact Study (RGIS), prepared for the County of Santa Barbara and dated July 1980, or any other analysis of impacts approved by the Community Development Director.

The proposed desalination project will require only temporary employees for the construction phase of the project. Once the project is on-line, the work force to staff the facility on a 24 hour per day basis will be comprised of up to 14 full time permanent employees. Applying the formulas contained in RGIS, the project will generate a demand for 1.08 new affordable housing units. As this is below the threshold of two (2.0), the proposed project is potentially consistent with this Policy.

Conservation Element. Policies related to water, air, cultural resources, biological and other resources are incorporated together to form the Conservation Element. Those policies which relate to the proposed project are discussed below.

Cultural and Historic Resources: Cultural Resources Policy 1.0 states: "Activities and development which could damage or destroy archaeological, historic, or architectural resources are to be avoided." This project is in an area of Cultural Resources sensitivity, according to the Master Environmental Assessment Cultural Resources Sensitivity Map. A Phase I Cultural Resources Study has been completed for the project which concludes that, with the exception of a section of the proposed pipeline at the southwest corner of the El Estero WWTP, there is little potential for finding important resources in the project area. With the inclusion of mitigation measures outlined in the Cultural Resources section of this EIR, this project is potentially consistent with this policy.

Air Quality: The Air Quality Goal states: "Maintain air quality above Federal and State ambient air quality standards." The project will have no significant impact on air quality locally and is, therefore, potentially consistent with this goal.

Biological Resources: Biological Resources Policy 6.0 states: "Intertidal and marine resources shall be maintained or enhanced." The proposed project could result in entrainment of plankton, fish and eggs because of the operation of the intake pump. There are also several reefs in the vicinity of the existing outfall which could potentially be affected by the brine which would be diluted and discharged with wastewater from the wastewater treatment plant. However, the assessment of potential marine biological impacts included in Section 3.4 of this EIR indicates that the proposed project will not result in significant adverse impacts on marine biology. Therefore, this project is potentially consistent with this policy.

Water Resources: The Water Resources Goal states: "Maintain existing and protect future potential water resources of the City of Santa Barbara." This project is potentially consistent with this goal because it helps to maintain the existing potable water supply on a temporary emergency basis.

Water Resources Policy 1.0 states: "Provide for a continued supply of water to the City which meets all Regional, State and Federal health standards." This project is potentially consistent with this policy as long as all Regional, State and Federal water quality standards are met, as shown in the Water Resources Section (3.3) of this EIR.

Noise Element. The Noise Element sets criteria for acceptable noise levels. The basic goal of the Noise Element is "to ensure that the City of Santa Barbara is free from excessive noise and abusive sounds..." The project, with the recommended mitigation measures contained in this EIR, will have no significant impact on noise and is, therefore, potentially consistent with this goal. Refer to Section 3.5 of this EIR for further discussion.

Scenic Highways Element. This project will not affect any existing scenic highways. However, Cabrillo Boulevard has been recommended for future designation. Because the pipelines will be underground and the plant is not visible from Cabrillo Boulevard, the project is potentially consistent with this Element.

Seismic Safety/Safety Element. If all recommendations of the soils and geology reports are followed, this project will be potentially consistent with this Element.

Interim Circulation Element. Because the project will not result in significant impacts on traffic, the project is potentially consistent with this Element.

Open Space Element. East Beach is listed as an important open space in the Open Space Element as part of the Waterfront Park system. Because there will be no above-ground facilities at East Beach, the project is potentially consistent with this Element.

Parks and Recreation Element. The project includes a proposal to sleeve the old sewer outfall within the East Beach area. Public use will not be affected for more than the two month construction period. This project is potentially consistent with this Element.

3.12.3 Local Coastal Plan (LCP)

This project lies entirely within the City's Coastal Zone. The LCP designates the proposed project site as Major Public and Institutional. Those policies which relate to the proposed project are discussed below.

Water and Marine Environments. Policy 6.2 states: "The City will support and encourage the enforcement of all laws enacted for the purposes of preserving and protecting marine resources, maintaining optimum populations of marine organisms, and maintaining the quality of the marine environment for the protection of human health." As indicated in the Water Resources, Biology and Human Health sections of this EIR, there will be no significant unavoidable impacts in these areas; therefore, this project is potentially consistent with this policy.

Policy 6.6 states: "Revetments, seawalls, bulkheads, groins, pipelines, outfalls and other necessary permitted construction shall be designed to eliminate or mitigate to the maximum extent adverse impacts on local shoreline sand supply." Because this project will use two existing offshore pipelines for seawater intake and brine discharge, there will be no new impact on local shoreline sand supply; therefore, this project is potentially consistent with this policy.

Policy 6.8 states: "The riparian resources, biological productivity, and water quality of the City's coastal zone creeks shall be maintained, preserved, enhanced, and where feasible, restored." In

addition, policy 6.10 states: "The City shall require a setback buffer for native vegetation between the top of the bank and any proposed project. This setback will vary depending upon the conditions of the site and the environmental impact of the proposed project." These two policies apply to the Laguna Channel which is called out as a coastal zone creek. A portion of pipeline corridor for the proposed project will be adjacent to Laguna Channel. The area that will be excavated is highly disturbed and no significant biological impacts are expected to occur. This project is potentially consistent with these policies.

Ocean-Dependent Activities. This section of the LCP requires that priority be given to coastal-dependent activities, such as commercial fishing and desalination plants. Policy 7.5 states: "Land area inland of the proposed easterly breakwater (area bordered by Garden Street, Yanonali Street/U.S. 101, Salsipuedes Street and the Railroad right-of-way) shall be designated to permit and encourage ocean-oriented industrial uses." As an ocean-dependent use, this project is potentially consistent with this policy.

Hazards. See discussion under the Seismic Safety/Safety Element.

Cultural Resources. See discussion under the Conservation Element.

Visual Quality. Policy 9.3 states: "All new development in the coastal zone shall provide underground utilities and the undergrounding of existing overhead utilities shall be considered high priority." As part of the electrical substation construction, it will be necessary to place 1 or 2 receiving poles, approximately 22 feet tall, at the substation. These poles are required for safety purposes to properly support the 66 kV powerlines. Because of their location within the confines of the El Estero WWTP, they will not be visible to the general public. In addition, 1 or 2 new power poles on Yanonali Street will be required. These poles are more visible to the general public. The project is potentially inconsistent with this policy. However, due to the temporary emergency nature of this project, the Planning Commission could choose to override this policy.

3.12.4 City Zoning Ordinance

The area associated with the proposed desalination facility and the onshore pumping station is zoned Ocean-Oriented Manufacturing with a Coastal Zone overlay (OM-1, S-D-3). The area

associated with the abandoned ocean outfall/proposed intake line and the intake structure is zoned Harbor Commercial with a Coastal Zone overlay (H-C, S-D-3). The project is potentially consistent with these zones.

3.12.5 Waiver of Discretionary Review

Due to the emergency nature of the need to establish a temporary water supply, the City Council has adopted Ordinance No. 4640 which waives the usual requirements for design review and approval by the Architectural Board of Review and Planning Commission approval of a Conditional Use Permit.

3.12.6 Master Water Plan

The Master Water Plan was completed in 1985. It is a comprehensive and inter-related package of strategies designed to provide a balance between water demand and water supply for the City. The primary goal of the Master Water Plan is to: "Ensure an adequate and cost-effective supply for the City of Santa Barbara consistent with the achievement of the following goals:

- Maximization of the self-sufficiency of the City's water supply

- Preservation of an appropriate quality of life for Santa Barbara residents."

Because this project is designed to ensure an adequate water supply during this temporary emergency drought situation, appears to be cost-effective, maximizes City self-sufficiency, and helps to preserve an appropriate quality of life for City residents, it is potentially consistent with this goal.

3.12.7 Five Year Water Policy Action Plan (5WPAP)

This plan was prepared in 1988 in recognition that, while the City is working to provide long-term water supply solutions, there would be more demand than supply, beginning by 1993, until new long-term water supplies are in place. The 5WPAP, through demand management (conservation, retrofitting, the Long Term Water Ordinance) and through the creation of new water supplies (wastewater reclamation, conjunctive use program, etc.), proposes to maintain an adequate water supply until long term solutions are in place. The 5WPAP includes discussion of the use of a

desalination plant to provide water in the interim. The proposed project is potentially consistent with the 5WPAP goal of providing additional water supply to meet demand on a short-term basis until long-term supply solutions are selected and in place.

3.12.8 Long Term Water Supply Program

In the fall of 1990 the City initiated a review of the City's long term water supply plans. The analysis included assessments of long-term demand, available supplies, alternative new supplies, and criteria for selection of new supplies. In December of 1990 the City Council conceptually approved the Draft Long-Term Water Supply Program, establishing a projected long-term demand, including a safety margin; defining acceptable shortages during droughts; and identifying the preferred new supply alternatives, including groundwater management, conservation, and desalination.

4.1 INTRODUCTION

Section 15130(a) of CEQA states that cumulative impacts shall be discussed when they are significant. Although the conclusion of the following assessment is that cumulative impacts are not significant, the discussion is provided for informational purposes.

This section presents an assessment of potential cumulative effects which could result if the proposed desalination project is constructed. Cumulative impacts include those impacts which may result from the incremental contribution of the proposed project when considered together with other past, present, or reasonably foreseeable future projects in the same general area of influence.

From a regional standpoint, the Santa Barbara South Coast area has experienced considerable development pressures from Outer Continental Shelf development of petroleum resources in the past, although this pressure has decreased somewhat recently. Increasing enrollment at the University of California at Santa Barbara and industrial and commercial development in the Goleta Valley and the City of Santa Barbara have also exerted development pressure and associated impacts in the area.

Current projects which are currently under construction in the same potential region of influence as the proposed desalination project include the CalTrans Highway 101 improvement project, including the Garden Street undercrossing, which is scheduled to be open to traffic in December, 1991. Construction of the proposed 10,000 AFY desalination project is scheduled to begin in July of 1991 and last for up to 13 or 14 months. It is only during the months of August and September, 1991, during the tourist season, that construction activity may be using intersections which exceed City standards. This is a short period of time and this potential impact may not occur because the State Street undercrossing will be complete thereby improving traffic conditions in the area (refer to the Traffic Supplement in Appendix C for more information). The CalTrans freeway project work will be winding down and/or completed by the time the desalination project is beginning to

peak from a construction standpoint. Another major planned project in the region of influence for the desalination project is the proposed Park Plaza project, located between the El Estero WWTP and Cabrillo Boulevard. This proposed project is located on an approximate 10.2 acre site, and includes a 150 suite hotel and expansion of Chase Palm Park on the north side of Cabrillo Boulevard. The EIR which was prepared for an earlier, but significantly different project in 1988 (Interface, 1988), predicted unavoidable significant impacts for air quality, water resources, traffic and circulation, and historic resources. Other potentially significant, but mitigable, effects were also predicted. Refer to the subject EIR for more information (Interface, 1988). It is currently estimated that the new Park Plaza project on this site could begin construction in September 1992, if approved. Construction of the proposed 10,000 AFY desalination project is planned to be completed by September of 1992, thereby limiting potential cumulative effects.

Other proposed projects (at various stages of approval) with the potential to result in cumulative effects with the proposed project include:

- Breakwater Restaurant (a 10,860 s.f. restaurant);
- Harbor View Hotel (an 11 room expansion); and
- Cabrillo Plaza (mixed use hotel/restaurant).

4.2 ASSESSMENT OF CUMULATIVE EFFECTS

Construction of the proposed desalination project would contribute to area-wide cumulative effects on traffic and circulation, noise, and air quality including fugitive dust. However, these impacts are not significant in light of the fact that construction of the Crosstown Freeway will be winding down as construction of the proposed desalination project is gearing up. There will be less construction traffic and less air quality impacts at the time project construction is peaking than is presently the case, primarily due to conclusion of the freeway construction.

The proposed desalination project, when considered together with other projects in the area, could result in minor cumulative effects to air quality and transportation. The threshold of significance for cumulative traffic impacts during the operation phase is the addition of one or more peak hour trips (PHTs) to any intersection impacted by the cumulative list of projects. A distribution analysis

for the proposed desalination project was completed during the Initial Study and concluded that this is not the case; therefore, this project does not contribute to cumulative impacts on traffic.

Because most air quality impacts are tied to traffic impacts, the threshold for cumulative air quality impacts is the same as for traffic. Therefore, no significant cumulative air quality impacts are expected to occur.

4.3 ASSESSMENT OF POSSIBLE PROJECT EXTENSION

In the event of an extended drought lasting longer than the proposed project's 5 year lifespan, water from this temporary desalination project may be required for a longer period of time than contemplated by this EIR. In the event that water from long-term water supplies is not sufficient to provide the water necessary for such necessities as human consumption, sanitation and fire protection, an extension of this desalination project may be considered. In order to do so, corresponding extensions and/or amendments of permits, environmental review and other rights for the operation and use of the facilities will be required. In connection with such possible extension, the following impacts are considered at this time. Actual mitigation measures for any project time extension will be based on the project description proposed and environmental analysis undertaken at the time of the decision to extend. Such analysis would include any additional baseline information that became available during this temporary 5 year project.

4.3.1 Geology and Soils

The exposure of the project to geohazards, including the potential for soil liquefaction during seismic activity and exposure to tsunami effects, would continue for the period of time in which project activity is continued. The geologic hazard mitigation measures proposed for the project in Section 3.2.3 appear at this time to be sufficient for any period of project continuation for emergency water supplies.

4.3.2 Water Resources

The exposure to flood flows and the changes in seawater salinity, density, turbidity, dissolved elements, temperature, and nutrient contents beyond the project's 5 year lifespan are not likely

to be appreciably different, although continued over a longer period in the event of an extension of the project.

The design and construction of the project appear sufficiently adequate for any extension. Any emergency plans should continue in effect. Any operational monitoring and mitigation provisions required for the project will need to be appropriately extended.

4.3.3 <u>Biological Resources</u>

No adverse impacts to terrestrial biology are anticipated. Any effects upon benthic organisms caused by reason of changes in salinity can be expected to continue. Pelagic organisms will continue to be less affected by such changes. Extension of the project would delay the impacts, if any, associated with cessation of desalination activity.

No additional mitigation measures are suggested for terrestrial biological resources. Although the impact on marine organisms actually removed from the water by the intake and filtering facilities would continue, no additional mitigation measures are proposed. Continuation of the monitoring and corrective action necessary for the proposed project should be sufficient to correct any similar problems that might persist during any extended operation.

4.3.4 <u>Noise</u>

The operational noise impacts can be expected to continue through any period of extended activity.

Specific mitigation activity proposed and any additional mitigation in response to monitoring activities adopted during the operation of the project should be sufficient to remedy adverse effects during any extension.

4.3.5 <u>Risk of Upset</u>

The risk of upset can be expected to continue through any period of extended activity.

The maintenance of the Risk Management Plan should continue to mitigate effects during any such extension.

4.3.6 Human Health

The finished water quality is not expected to vary considerably from the operation of the proposed project during any extension. There should be no significant difference in kind to any risk of upset, although the exposure would continue during any such extension.

No additional mitigation measures beyond those implemented for the proposed project are recommended in the event of project extension.

4.3.7 Visual Effects

No additional construction activity should be required for the period of any needed extension. No additional visual impacts are expected from any extension of plant operations.

No additional mitigation measures are recommended for any such extended activity.

4.3.8 Recreation

No additional construction activity should be required for the period of any needed extension. No immediate impacts to recreation resources are expected from any extension of plant operations.

No additional mitigation measures are recommended for any such extended activity.

4.3.9 Cultural Resources

No impacts upon cultural resources occur by reason of the continued operation of the plant.

No additional mitigation measures are recommended.

4.3.10 Energy Use

The impacts of an extension, if needed, upon energy resources would be much the same given available excess capacity as for the proposed project, but continued for the period of the extension.

No additional mitigation is recommended during the period of any extension.

4.3.11 Growth Inducing Impacts

Given that the purpose of such a project extension would be to continue provision of an emergency, temporary water supply during a prolonged drought, the extension that appears possible under restrictions and controls in place (see Section 5.0) would not add to any growth inducing impacts.

No additional mitigation measures are recommended for the period of any such extension.

The proposed desalination project is intended to temporarily replace normal City water supplies not now available due to the drought by up to 10,000 AFY for up to five years. Depending upon the City's need for replacement water, the proposed 10,000 AFY project could provide additional water supplies for regional use by other nearby communities impacted by the drought (e.g., Goleta, Montecito, Summerland and/or Carpinteria). Assuming that the proposed desalination facility is implemented, the City is still predicting that its water supplies will fall significantly short of demand in the future until adequate rainfall and replenished supplies are available (refer to Table 7-1 for more information).

The proposed project will be terminated or put on temporary hold if the City's traditional water supplies become available again at adequate levels during the project life. An "adequate water supply" is defined by the City as 100,000 acre-feet of storage in Lake Cachuma in combination with the replenishment/recovery of the City's groundwater basins (versus drawdown).

Sales of water from the proposed project to neighboring South Coast communities will also be limited to replacement of supplies lost due to the drought. Agreements for water sales will be contingent on satisfaction of CEQA review requirements, including consideration of growth inducement, by each community proposing to buy water.

The proposed project will require an estimated peak construction workforce of 65 in month five of construction. It is currently anticipated that the majority of this workforce will be supplied from the local labor force and that, once the construction phase is complete, any specialized labor force brought in from outside the area to construct the project will leave the area. The operational workforce will normally not exceed eight workers on any one shift and the total operational workforce will be 14. Growth-inducing impacts associated with the workforce will be insignificant.

Because the intent of the project is to supply water only to replace water lost to the drought, it will not result in growth inducing effects. Such effects have been a concern of City Council and the

community for some years, as indicated by the amendment of the City Charter by a vote of the people to include two provisions, Sections 1507 and 1508, as follows:

Section 1507. General Plan and Zoning Ordinance Amendment Limitations.

It is hereby declared to be the policy of the City that its land development shall not exceed its public services and physical and natural resources. These include, but are not limited to, water, air quality, wastewater treatment capacity, and traffic and transportation capacity. All land use policies shall provide for a level and balance of residential and commercial development which will effectively utilize, but will not exhaust, the City's resources in the foreseeable future. In making land use decisions, the City shall be guided by the policies set forth in this section. In furtherance of these policies, no amendments to the City's General Plan and Zoning Ordinance shall be effective unless approved by five (5) affirmative votes of the City council. Upon such approval, General Plan and Zoning Ordinance amendments shall be conclusively presumed to comply with the policies set forth herein. (Adopted by election held November 2, 1982.)

Section 1508. Nonresidential Growth Limitations.

In furtherance of the policy stated in Section 1507, and to assure that nonresidential development does not exceed the City's water resources, traffic capacity, and affordable housing supply, the City Council shall place the following limits on nonresidential development through adoption of General Plan amendments and subsequent adoption of ordinances and resolutions which are consistent with the General Plan amendments (collectively referred to as "growth limitations" in this section). The growth limitations shall reduce non-residential development from the existing General Plan potential of one hundred, sixteen million (116,000,000) square feet and restrict it to no more than three million (3,000,000) square feet over the next twenty (20) years, commencing January 1, 1990. If the growth limitation ordinances and resolutions have not been adopted by January 1, 1993, no further projects shall be approved until after said ordinances and resolutions are adopted.

(a) **Limitations on New Development.** The growth limitations shall restrict nonresidential development (including pending and approved projects) over the next twenty

(20) years to no more than three million (3,000,000) square feet above the October 1988 baseline condition. This allowable square footage shall be allocated as follows:

Category	Square Footage
Approved Projects	900,000
Pending Projects	700,000
Vacant Property	500,000
Small Additions	600,000
Community Priorities	300,000
TOTAL:	3,000,000

This limitation shall be implemented by zoning ordinance amendments, parcel rezoning, a project evaluation system, a floor area ratio ordinance and other appropriate means to reduce or restrict the zoning to allow a maximum of three million (3,000,000) additional square feet above the October, 1988, baseline condition at full buildout. The balance of any square footage which is not utilized in any category shall be either (i) set aside for possible use after twenty (20) years, or (ii) used during that twenty (20) year period for a project approved by the voters. Small additions will be limited to no more than thirty thousand (30,000) square feet annually.

(b) **Traffic, Water and Affordable Housing Resources.** The growth limitations shall provide that a new or pending nonresidential project may be constructed only if it will not cause a significant and unmitigated adverse impact on any of the following:

1. The City's water resources.
2. Traffic within the City.
3. The supply of affordable housing in the City and South Coast area.

A finding shall be made that resources will be available and traffic improvements in place at the time the project is ready for occupancy.

(c) **Community Priority Projects.** Community Priority Projects are those which are found by the City Council as necessary to meet present or projected needs directly related to public health, safety or general welfare. Such needs shall not be subject to the provisions of Subsection (b).

(d) **Interim Limitations.** The City Council shall adopt, on an interim basis, ordinances and resolutions adequate to limit nonresidential development until such time as the growth limitations required by this section are adopted. No projects shall be approved between the effective date of this Charter section and the date these interim measures are effective. At such time as the growth limitations ordinances and resolutions required in (a), (b), and (c) above are in effect, this section (d) shall be deemed repealed. The interim limitations shall:

1. Prohibit nonresidential development which, if approved, would prejudice the City's ability to comply with this section.

2. Prohibit approval of a pending project if it will cause either an unavoidable and unmitigated significant adverse environmental effect, or an adverse effect on traffic in violation of adopted City policies as set forth in the Circulation Element and other applicable ordinances and resolutions. This policy does not apply in the event that the project's only significant environmental effect is a cumulative effect on air quality.

3. Prohibit the conversion of residential units to nonresidential uses within the R-4 zone and all nonresidential zones. Prohibit demolition of nay residential unit in any nonresidential zone unless it will be replaced on site with an affordable unit.

4. Require that any nonresidential project on vacant land not exceed a floor area ratio of 0.25.

5. Allow Community Priority Projects to proceed, notwithstanding paragraphs 1 through 4 of this Subsection (d), provided the City Council finds that

the project is needed to satisfy a present or projected need directly related to public health, safety or general welfare.

(e) **Definitions.** A minor addition of one thousand (1,000) square feet or less shall not be considered a project under this section. Hotel rooms replaced on a room-for-room basis shall not be considered a project under this section. A "general welfare project" is defined as a project which has a broad public benefit (for example: museums, childcare facilities, or community centers) and which is not principally operated for private profit. The remaining terms used in this section shall be defined by ordinance. (Adopted by election on November 3, 1989.)

As indicated in EIR Section 3.12, this proposal is consistent with these sections since it assures that the City will live within its resources by providing an ongoing supply of water for present businesses and residents in the City. The entire focus of the General Plan Update process which culminated in the adoption of Charter Section 1508 was on matching development to resource availability including, but not limited to, water supply.

In summary, the project will not create an additional new water supply that could allow for and/or induce growth since it will only replace on a temporary emergency basis a portion of normal supplies which are not now available due to the drought. Minor increases in demand for City R7-6
services will temporarily occur during the construction phase associated with the construction workforce, but these impacts will cease once construction is complete.

6.1 INTRODUCTION

This section presents a brief summary of the City's estimated water rates with and without the proposed desalination project as well as other potential new short-term water supply sources. Background data on the cost of the City's traditional water supplies is also presented.

6.2 COST PER ACRE FOOT OF DELIVERED WATER BY SOURCE

The City's main water supplies and estimated costs before the drought are as follows:

- Gibraltar Reservoir = $110 per acre foot (AF)
- Cachuma Lake = $135 per AF
- Groundwater = $200 per AF

For comparison, the base costs of 10,000 AFY of delivered water in the desalination proposals considered by the City's Alternative Water Supply Review Panel ranged from $1866 to $2200 per AF. Water supplied by tanker would have a base cost ranging from $2399 to $4235. The base cost agreed to by the City and Ionics for water produced by the desalination plant is $1866 per AF for 10,000 AFY. Refer to Section 6.3 for the City's estimates of future water rates in the City for "average" usage.

6.3 ESTIMATED EFFECTS ON WATER RATES IN THE CITY OF SANTA BARBARA

6.3.1 Existing Stage III Drought Water Rates

Given current costs to the City of existing supplies, developing and implementing new supplies during the drought, and reduced water deliveries during the drought, the average cost of water presently is $3.50 per hundred cubic feet (hcf).

Metered water charges in the City under the steeply increasing Stage III drought block rates are summarized below for selected usages:

- Residential Single Family

- First 4 Hundred Cubic Feet (HCF) per month	$ 1.09/HCF
- Next 6 HCF	$ 3.50/HCF
- Next 6 HCF	$ 8.00/HCF
- Over 16 HCF	$ 16.50/HCF

- Small Commercial

- First 20 HCF	$ 3.50/HCF
- Next 13 HCF	$ 3.50/HCF
- Next 12 HCF	$ 7.00/HCF
- Over 45 HCF	$ 12.00/HCF

- Large Commercial & Industrial

- Base Charge - all HCF	$ 3.50/HCF
- Peak Surcharge -- added to base charge for use above 70% of historical off-peak demand	$ 12.00/HCF

- Irrigation - Potable

  - Winter (first 15 HCF); Spring (33 HCF); Summer (63 HCF); and Fall (43 HCF) — $ 1.50/HCF

  - All other (i.e., above first #'s above) — $ 12.00/HCF

- Irrigation - Non-Potable

  - All HCF — $ 1.20/HCF

6.3.2 Estimated Future Rates

The "average" residential water user is currently billed at a maximum rate of $3.50/HCF for up to 10 HCF per month. If the proposed desalination project is implemented, this rate will rise about 6 percent to $3.70/HCF, assuming total City water sales are 14,500 AFY, or to $4.13/HCF if total City water sales are only 13,000 AFY.

7.1 INTRODUCTION

This section discusses a range of alternatives to the proposed reverse osmosis desalination project, including: alternate sites; alternate technologies; potential alternate methods of achieving the R4-2 project's objectives; and the No Project Alternative. The alternatives assessment includes a R8-1 comparison of alternatives, including potential environmental effects, feasibility, and costs, as applicable. Refer to Section 6.2 for more information regarding costs. The purpose of the alternatives analysis is to determine whether it is possible to meet the basic project objectives via an alternate method that would reduce or eliminate potential significant effects to the environment associated with implementation of the proposed project. This assessment of alternatives has been prepared in accordance with Section 15126(d) of the guidelines for implementation of the California Environmental Quality Act (CEQA) of 1970, as amended. This section is intended to provide decision makers and the public with information on alternatives in order to facilitate informed decision making.

7.2 DESCRIPTION OF ALTERNATIVES CONSIDERED AND ASSESSMENT OF CONSISTENCY WITH PROJECT OBJECTIVES

7.2.1 Definition of Project Criteria

In order to identify and assess the possible alternatives to the project, it is necessary to define the intended purpose of the project. The basic objective of the proposed project is to provide up to 10,000 AFY of water to be on-line by early 1992. The proposed project would operate for up to five years as a temporary emergency project. The proposed project could be terminated or put on temporary hold if the City's traditional water supplies become available again at adequate levels during the project life.

Additional criteria developed by the City that are specific to a temporary emergency desalination project are those presented below.

Site Availability Near the Ocean and Within the City Limits. This criterion is based on the fact that, if the plant is within the City limits, the number of agencies required to approve the project are reduced and, therefore, time is saved. Sites near the ocean will reduce the need to construct pipelines to offshore facilities and potential impacts during construction and operation related to noise, traffic, sensitive habitats, etc.

Appropriate Zoning. This criterion requires that sites be zoned to allow a desalination plant in order to reduce the potential for Zoning and General Plan inconsistency and the need for additional processing time for approvals due to Zoning and/or General Plan amendments.

Neighborhood Compatibility. The potential site must be in an area which is compatible with the proposed use. Desalination plants are industrial uses which may produce noise and visual impacts of a nature most appropriate for industrial areas. Use and storage of hazardous materials is also most appropriate in industrial areas. The best location for such a project is in an area which already includes other industrial uses.

Existing Facilities for Brine Discharge and Sea Water Intake. An important criterion is the availability of existing facilities for brine discharge and seawater intake. This will reduce the potential environmental impacts of placing new pipelines on the ocean floor (construction impacts, disturbance of the ocean floor, marine life and the surf zone, coastal access and recreation, etc.). It will also minimize the amount of time necessary for construction, permitting, environmental review, etc..

Tie-In Point and Water Distribution. An adequate tie-in to the City water system must be available so that water can move into the City system. If it is not available, the time in permitting and construction could result in a delay in providing necessary emergency water supplies. Any alternative site in the Goleta Water District (GWD) would not be able to meet this criterion. The only connection of adequate size to carry water from Goleta to Santa Barbara is the South Coast Water Conduit. This conduit carries only raw (untreated) water. Water from the desalination plant will be treated. In addition, there is no existing ability to transfer water from GWD to the City

through other existing distribution lines due to differences in pressure and inadequate main size (Bob Roebuck, City of Santa Barbara).

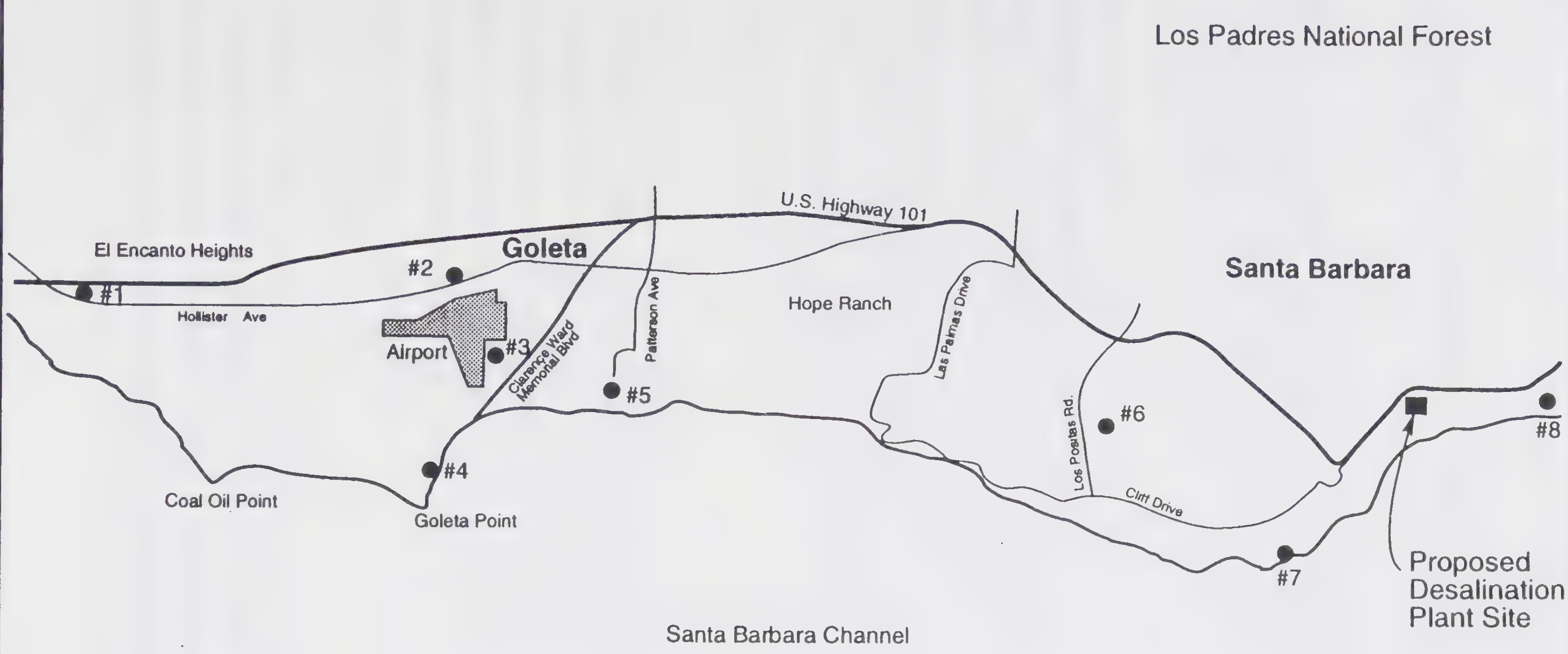
Environmental Concerns. One of the most important criteria is whether placement of the plant on another site would result in fewer environmental impacts than would occur for the proposed project. If the site will not reduce environmental effects, it will not result in an environmentally superior alternative as required by CEQA.

Timeliness of Completion. Another critical criterion is that the alternative must result in providing the City with an emergency water supply by early 1992. It is projected that Lake Cachuma will be largely dry by that time and, therefore, the need for the water supply will be acute. Reading through the above criteria, it can be seen that one of the major effects of not meeting the criteria will be an increase in the time (months or years) necessary to receive permits and/or construct the project. This would, in all likelihood, render the basic objective of the project to be on-line by early 1992, unattainable. Therefore, those alternatives that cannot meet the basic project objective are not appropriate for consideration as an environmentally superior alternative per CEQA.

7.2.2 Desalination Facility Sites

Several possible alternative sites for a short term emergency desalination plant were identified by the Environmental Review Committee based on public input during the public hearing on the Initial Study and environmental determination or by people commenting on the Notice of Preparation. These are each discussed below, including a short discussion on the site, whether or not it meets the criteria established by the City (refer to Section 7.2.1) and a short description of potential environmental concerns. The general locations of the alternative sites which were considered are shown on Figure 7-1. A summary comparison of the alternative temporary desalination plant sites is presented in Table 7.2-1.

Adjacent to Santa Barbara Airport. The only areas adjacent to the City Airport that could be considered for placement of a desalination plant would be along the northerly side, either north or south of Hollister Avenue. The remaining areas are for Airport operations or are in Airport Approach Zones or within the boundary of the Goleta Slough, an important wetland. The Airport is served by the Goleta Water District.



Alternate Sites Key

1 Adjacent to Ellwood Power Plant
2 Airport Property
3 Adjacent to Goleta WWTP
4 UCSB Campus
5 Adjacent to More Mesa Natural Gas Complex
6 Las Positas Park
7 Shoreline Park
8 East Beach

Approximate Scale: 1 inch = 1.5 miles

Project No. 906B140A

Santa Barbara Emergency Water Supply Project

Woodward-Clyde Consultants

Figure 7-1. GENERAL LOCATION OF ALTERNATE DESALINATION PROJECT SITES CONSIDERED

Table 7.2-1. SUMMARY COMPARISON RATINGS FOR ALTERNATIVE TEMPORARY EMERGENCY DESALINATION PLANT SITES

	Alternative Sites[a]								
Environmental Factors	Proposed Desalination Project Site	Adjacent to Ellwood Power Plant (1)	Airport Property (2)	Adjacent to Goleta WWTP (3)	UCSB Campus (4)	Adjacent to More Mesa Natural Gas Complex (5)	Las Positas Park (6)	Shoreline Park (7)	East Beach (8)
Ability to Meet City Criteria									
Tie-in Point/Water Distribution	C	I	I	I	I	I	C	I	I
Seawater Intake/Brine Outfall	C	I	I	I	I	I	I	I	C
Zoning	C	C	C	C	C	C	I	I	I
Land Use Compatibility	C	C	C	C	I	U	I	I	I
Chemical Storage	C	C	I	C	I	I	I	I	I
Environmental Concerns/ Compatibility	C	I	I	I	I	I	I	I	I

[a] Refer to Figure 7-1 for approximate locations of alternate sites considered. Ratings Key: C = consistent/compatible; I = potentially inconsistent/incompatible; U = unknown -- more information needed to evaluate. Refer to text for more information.

Tie-in Point/Water Distribution. This criterion cannot be met because potential sites in this area are served by the Goleta Water District. See discussion of the criteria above.

Sea Water Intake and Brine Outfall. It would be necessary to provide a new sea water intake line from the ocean to the proposed plant. In addition to locating the intake structure the necessary distance offshore, construction of an onshore pipeline would be necessary for a distance of approximately one mile. It might be possible to connect the brine outfall to the Goleta Waste Water Plant outfall, although it would be necessary to construct a brine discharge line from the desalination plant to the wastewater treatment plant. Depending on the alignment chosen, there is a potential for disruption of wetland and creek systems and cultural resource areas. The time required to reach agreements with the Goleta Sanitary District for use of the outfall and to receive permits and construct the seawater intake line would not meet the timeliness criteria. The potential impacts on marine life due to construction of the intake pipeline and structure, and possibly a new outfall, could be significant.

Zoning. Depending on the location, the zoning would either be A-C (Airport-Commercial), A-F (Airport Facilities), or A-I (Airport-Industrial). The only zone that might allow the desalination plant would be the A-I Zone which allows, among other uses, "public utility facilities, including pump plant, transformer yard, switching station, service and equipment yard and similar uses." Location of the plant in any other zone would require a potentially time consuming zone change.

Land Use Compatibility. If the desalination plant is placed in the area of the A-I zone, it would be generally compatible with adjacent land uses.

Chemical Storage. It would be necessary to create a separate chemical storage facility at this location since there are no nearby City facilities of an appropriate size to handle such chemicals.

Environmental Concerns. In addition to the potential impacts on marine life and the wetland and creek system discussed above, much of the area that could be impacted is in a cultural resource sensitivity area, primarily for Native American sites. Many significant

village, sacred and burial sites are recorded in this area. Traffic impacts could be significant, even during the operational phase of this project, due to the fact that the Fairview/Hollister intersection substantially exceeds an acceptable level of service.

The Airport does not meet the criteria for location of a desalination plant due to its lack of available tie-in to the City water system, distance from the ocean, and the potential effects which would result from the construction of the intake and outfall pipelines. It would not meet the time limits set for the proposed project to have an emergency water supply in place. In addition, environmental concerns related to marine life, wetlands, riparian habitats, traffic and cultural resources are greater than at the proposed project site.

More Mesa Natural Gas Complex. The More Mesa Natural Gas Complex is an 8 acre site owned by Southern California Gas Company. This area is a subsurface storage site for natural gas. It is located on More Mesa, a coastal mesa east of Ward Memorial Boulevard (State Route 217) and west of Hope Ranch. The mesa sits at an elevation approximately 50 to 100 feet above the ocean.

Tie-in Point/Water Distribution. Like the Airport site, this criterion cannot be met because this site is served by the Goleta Water District. See discussion of the criteria above.

Seawater Intake/Brine Outfall. This site is more difficult than the project site due to the fact that it is 50 to 100 feet above sea level. It would be necessary to provide a substantial pump station on the beach at the base of the bluff to bring the water to the plant. This could impact coastal access and recreation and could increase project costs, noise impacts and energy usage. It may be possible to connect the brine discharge line to the Goleta Waste Water Plant outfall, although it would be necessary to construct an interconnection line from the desalination plant to the wastewater treatment plant outfall. The potential for disruption of wetland and creek systems, marine resources, and cultural resources is substantial. The time required to reach agreements with Goleta Sanitary District for use of the outfall and to receive permits and construct the seawater intake line would not meet the timeliness criteria.

Zoning. This site is in the unincorporated area of the County and is zoned PU (Public Utilities). According to the County's Coastal Zoning Ordinance, the purpose of this district

is "to provide areas for the facilities of a public utility or public service entity" (Section 35-88). A "water filtration plant" is a permitted use in the PU district.

Land Use Compatibility. This area, although used for natural gas storage, is primarily natural in appearance. Portions of the parcel on which this site is located are in a designated environmentally sensitive habitat area and/or adjacent to residential uses. The use of this area would not be as compatible with adjacent land uses as the proposed project.

Environmental Concerns. It would be necessary to disturb previously undisturbed ocean floor in order to construct a sea water intake line. This could result in significant impacts to marine resources. There is also potential for significant impacts on terrestrial biological resources in and near the project area. Construction of a plant on the mesa and a pump station at the base of the bluff could result in noise and visual impacts. Construction of these components could also impede coastal access and could result in impacts on recreational opportunities.

The More Mesa site does not meet the criteria for location of a desalination plant due to its lack of available tie-in to the City water system, and the potential effects which could result from the construction of the plant, pump station, intake pipeline, and possible tie-in to the Goleta WWTP. It would not meet the time limits set to have an emergency water supply in place. In addition, environmental concerns related to marine and terrestrial resources, noise, visual resources and recreation are greater than at the proposed project site.

Adjacent to the Goleta Wastewater Treatment Plant. This site is owned by Southern California Gas Company and is about 16 acres in size. It is located east of Goleta Waste Water Treatment Plant. The land consists of disturbed and undisturbed wetlands and vernal pools.

Tie-in Point/Water Distribution. Like the Airport site, this criterion cannot be met because this site is served by the Goleta Water District. See discussion of the criteria above.

Sea Water Intake/Brine Outfall. It would be necessary to provide a sea water intake line from the ocean to the proposed plant. In addition to locating the intake structure the necessary distance offshore, construction of an onshore pipeline would be necessary for a distance of approximately one-half mile. It might be possible to connect the brine discharge

to the Goleta Waste Water Plant outfall, although it would be necessary to construct an interconnection line from the desalination plant to the waste water treatment plant. The potential for disruption of wetland and creek systems and cultural resources is substantial. The time required to reach agreements with the Goleta Sanitary District for use of the outfall and to receive permits and construct the sea water intake line would not meet the timeliness criteria.

Zoning. This site is in the unincorporated area of the County and is zoned PU (Public Utilities). See discussion above for allowable uses in the zone district.

Land Use Compatibility. The desalination plant would be generally compatible with adjacent existing land uses, though portions of the site may encroach into a designated wetland area and/or flood zone.

Environmental Concerns. Like other low-lying sites in this area, construction would likely result in impacts on designated environmentally sensitive habitat areas. In addition, like the Airport sites, this is an area of extreme cultural resources sensitivity. Depending on specific component locations, impacts could be significant. There could also be significant impacts on marine resources. Traffic impacts could be significant, even during the operational phase of this project, due to the fact that the Fairview/Hollister intersection substantially exceeds an acceptable level of service.

This site does not meet the criteria due to the lack of tie-in, the time necessary to come to agreement with the Goleta Sanitary District, gain necessary regulatory approvals, and the need to construct a seawater intake pipeline. It would therefore not meet the time limits set to have an emergency water supply in place. Environmental concerns related to marine biology, terrestrial biology, traffic and cultural resources are greater than at the proposed project site.

University of California, Santa Barbara (UCSB) Campus. UCSB is located on a low coastal mesa immediately south of the City airport.

Tie-in Point/Water Distribution. Like the Airport site, this is in an area served by GWD. This criterion cannot be met because this site is served by the Goleta Water District. See discussion of the criteria above.

Seawater Intake/Brine Outfall. The University has a small seawater intake structure for its marine biology facility; however, it is inadequate to serve the proposed desalination plant. It would, therefore, be necessary to construct both an intake pipeline and structure and a brine discharge line/outfall. This could require substantial disturbance of the ocean bottom. Also, substantial additional time for studies, permitting and construction would be necessary.

Zoning. UCSB has an adopted Long Range Development Plan (LRDP). A new LRDP has been approved by the University of California Board of Regents and is expected to be before the California Coastal Commission for approval in the near future. UCSB is not subject to City or County zoning. UCSB is interested in pursuing additional water resources; however, the LRDP Land Use Plan does not currently include any area on campus to site a desalination project.

Land Use Compatibility. The desalination plant would not be compatible with the academic and residential land uses at almost any location at UCSB. The only possible exception would be in the area of the existing maintenance facilities along Mesa Road. There are no sites of sufficient size with appropriate land use designations in this area.

Environmental Considerations. It would be necessary to disturb previously undisturbed ocean floor in order to construct the seawater intake and brine discharge lines. In addition, there would be potential for significant traffic impacts (see UCSB LRDP EIR for more information). Noise resulting from a large desalination plant could result in significant impacts on classrooms and/or student housing. Almost any plant location at UCSB could also result in visual impacts.

This site does not meet the criteria due to the lack of a tie-in to the City water system, and the need to construct a seawater intake pipeline and brine outfall. It would therefore not meet the time limits set to have an emergency water supply in place. In addition, environmental concerns related to marine biology, traffic, visual impacts and noise are greater than at the proposed project site.

Adjacent to the Ellwood Power Plant. This 2.1 acre site is located in the western part of Goleta, just north of Hollister Avenue and east of Armas Canyon Road. The Southern Pacific Railroad lies immediately to the north of the site. The closest structure, other than the Ellwood Power Plant, is Ellwood School, about 1200 feet away. The Ellwood Power Plant is designed as a natural gas

turbine "peaking" plant. Its purpose is to provide electricity during peak demand periods. It is not licensed for continuous use. It would require a relicensing process to be operated for continuous use to provide power for this project. The intake and outfall piping would most likely cross Hollister Avenue and follow the easterly edge of the Sandpiper Golf Course to a 30 foot bluff at the ocean edge. As with the More Mesa site, a pump station would be required at the base of the bluff.

Tie-in Point/Water Distribution. Like the Airport site, this criterion cannot be met because this site is served by the Goleta Water District. See discussion of the criteria above.

Seawater Intake/Brine Outfall. It would be necessary to construct both an intake pipeline and structure and a brine discharge line/outfall. This could result in substantial disturbance of the ocean bottom. Also, substantial additional time for studies, permitting and construction would be necessary.

Zoning. This property is in an unincorporated area of the County and is zoned PU (Public Utilities). See More Mesa site discussion for allowable uses in this zone district.

Land Use Compatibility. The desalination plant would be generally compatible with surrounding industrial land uses.

Environmental Concerns. It would be necessary to disturb previously undisturbed ocean floor in order to construct the seawater intake and brine discharge lines. This could result in significant impacts to marine resources. Construction of a pump station at the base of the bluff could result in noise and visual impacts as well as coastal access and recreational impacts.

The Ellwood site does not meet the criteria for location of a desalination plant due to its lack of available tie-in to the City water system, distance from the ocean and the potential effects which would result from the construction of the outfall and intake pipelines. It would not, therefore, meet the time limits set to have an emergency water supply in place. In addition, environmental concerns related to marine resources are greater than at the proposed project site.

Shoreline Park. Shoreline Park is 14.67 acre park owned and operated by the City of Santa Barbara. It is on a mesa immediately west of Santa Barbara Harbor and Leadbetter Beach. It is used for passive and non-structured recreation and is composed primarily of turf with scattered picnic areas.

Tie-in Point/Water Distribution. There are no existing water mains of adequate size to distribute the water to the City in this area. It would be necessary to construct a new water transmission line from Shoreline Park to the top of the Mesa in order to tie in to existing water transmission lines that distribute water to other areas of the City (Bob Roebuck, City of Santa Barbara). This would require environmental review, permitting and considerable disruption during construction and would result in additional construction time.

Seawater Intake/Brine Outfall. This site is more difficult than the project site due to the fact that it is 75 to 100 feet above sea level. It would be necessary to provide a seawater intake line and a substantial pump station on the beach at the base of the bluff to bring seawater to the plant. It would also be necessary to construct a brine discharge line/outfall at this location. This could increase both project costs and energy usage. In addition, there could be significant impacts on marine biology due to placement of the pipelines along the ocean floor.

Zoning. This site is zoned P-R, Park and Recreation. The zone only allows park-related uses. The desalination plant is not consistent with the zoning.

Land Use Compatibility. Shoreline Park is adjacent to a single-family residential area. Given the type of traffic (i.e., trucks), the plant's visual appearance and the amount of noise generated by the project, it is not compatible with the park and surrounding residential neighborhood.

Environmental Concerns. Placement of the desalination plant at Shoreline Park could result in significant marine biology, noise, recreation and visual impacts. It is likely that the recreation and visual effects would be unavoidable. The cost of adequate noise mitigation might also be prohibitive.

This site does not meet the criteria due to the lack of tie-in, the need to construct a seawater intake pipeline and brine discharge line/outfall, and zoning and neighborhood compatibility. It would not meet the time limits set to have an emergency water supply in place. In addition, environmental concerns related to marine biology, traffic, visual impacts and noise are greater than at the proposed project site.

Las Positas Park. Las Positas Park is a 90-plus acre park owned by the City and operated by the non-profit Las Positas Park Foundation. It is an active park with soccer and baseball fields, an amphitheater, group picnic areas and day camp facilities. The City has also approved additional facilities including swimming pool with stadium, tennis stadium and additional tennis courts and gymnasium and locker facilities.

> Tie-in Point. There is an existing water distribution line in Las Positas Road to which a desalination plant could tie in.
>
> Seawater Intake/Brine Outfall. It would be necessary to construct both intake and outfall pipelines. The most likely alignment would be down Las Positas Road and through Arroyo Burro Beach County Park and into the ocean in order to use this site.
>
> Zoning. The park is presently zoned R-1, Single-Family. The park is in the process of being rezoned to P-R, Park and Recreation, at which time it will be subject to the same limitations as outlined for Shoreline Park. Under the R-1 zoning, a Conditional Use Permit is required to construct non-residential uses in this park.
>
> Land Use Compatibility. The park is surrounded by single family homes. Given the type of traffic (i.e., trucks), the plant's visual appearance and the amount of noise potentially generated by the project, it is not compatible with the park and surrounding residential neighborhood.
>
> Environmental Concerns. The construction of the outfall and intake lines could impact wetland areas and riparian habitat adjacent to Las Positas Road. In addition, in constructing the intake and outfall lines through Arroyo Burro Beach, there would be short-term impacts on recreation and access. There could also be impacts on Arroyo Burro Creek in this area. There could also be significant impacts on marine biology during offshore

construction of the intake and outfall lines. The operation of the plant could result in significant noise impacts on the surrounding residences. The project could also be visually inconsistent with the site.

This site does not meet the criteria due to the need to construct a seawater intake pipeline and brine discharge line/outfall, and zoning and neighborhood compatibility. It would not meet the time limits set to have an emergency water supply in place. In addition, environmental concerns related to marine biology, traffic, visual impacts and noise are greater than at the proposed project site.

East Beach. East Beach is an approximately 44 acre park owned and operated by the City of Santa Barbara. It is generally located east of Chase Palm Park, west of the Clark Estate and south of Cabrillo Boulevard. It includes swimming beaches, sand volleyball courts, a wading pool, turfed picnic area and the Cabrillo Pavilion.

Tie-in Point/Water Distribution. There are no existing water mains of adequate size to distribute the water to the City in this area. It would be necessary to construct a new water transmission line in order to tie in to existing water transmission lines that distribute water to other areas of the City (Bob Roebuck, City of Santa Barbara). This would require considerable disruption during construction and would result in additional environmental review, permitting and construction time.

Seawater Intake/Brine Outfall. This project could tie in to the existing El Estero WWTP outfall line for brine discharge as the proposed project will. In addition, it could use the abandoned outfall line as the seawater intake line as will the proposed project.

Zoning. This site is zoned P-R, Park and Recreation. The zone only allows park-related uses. The proposed desalination plant is not consistent with the zoning.

Land Use Compatibility. East Beach is across from a multiple-family residential area and the Santa Barbara Zoological Garden. Given the type of traffic (i.e., trucks), visual appearance, and the amount of noise potentially generated by the project, it is not compatible with the surrounding neighborhood.

Environmental Concerns. Placement of the desalination plant on East Beach could result in significant unavoidable visual impacts since Cabrillo Boulevard is designated as a future Scenic Highway in the Scenic Highways Element. In addition, the noise generated could result in significant impacts on recreational users as well as on residents and/or hotel dwellers, depending on its location. Because the project would take up land now used for recreational purposes, there would be significant unavoidable impacts on recreation.

This site does not meet the criteria due to zoning and neighborhood incompatibility. In addition, environmental concerns related to traffic, visual impacts, noise and impacts on recreation are greater than at the proposed project site.

7.2.3 Alternative Desalination Technologies

The proposed desalination project would utilize reverse osmosis (RO) technology which utilizes a semi-permeable membrane (or filters) to convert seawater into freshwater and concentrated R4-2
seawater brine. An alternate technology which was considered in detail by the City Alternative R8-1 R9-2
Water Supply Panel is low temperature distillation/vapor compression. A proposal by Israel Desalination Engineering (IDE)/Ambient Technologies, Inc. (ATI) was considered in detail by the City, including feasibility, potential environmental effects, and cost of delivered water. The potential environmental effects associated with construction and operation of a facility utilizing this alternate desalination technology are considered to be very similar to an RO facility, although the distillation process requires up to 50 percent more energy than the RO process (City Council Agenda Report, August 3, 1990, Appendix D). The distillation facility proposed by IDE/ATI was significantly taller than the RO facility proposed by Ionics, and would result in greater visual impacts. In addition, the offshore intake/caisson with pumphouse proposed by IDE/ATI would detract from the character of Stearns Wharf and diminish ocean views. The cost of delivered water for the proposed RO is also less than the distillation project that was proposed by IDE/ATI. The cost of delivered water and the energy consumption differential contributed to the City's selection of the Ionics proposal among other factors.

Some of the negative aspects of the LT-MVC project proposed by IDE/ATI could likely be avoided if the intake design proposed by Ionics was utilized instead. The IDE/ATI team did not propose such a design. Even if it is assumed that the new intake design could be adapted to the LT-MVC project, there would still be uncertainty regarding where the proposed caisson/clarifier structure

could be located and how clarifier sludge would be disposed of. Assuming the Ionics' intake design which utilizes the City's abandoned outfall line was adapted to the IDE/ATI distillation project, some negative offshore impacts could likely be avoided, but the greater energy usage and onshore visual impacts (compared to the Ionics proposal) could not. Refer to Appendix D for more information. A summary comparison of the environmental factor ratings for the proposed reverse osmosis project versus other alternative temporary emergency water supply projects, including the IDE/ATI proposal, is presented in Table 7.2-2.

Other desalination related alternatives which were considered but deleted from further consideration due to technical or permitting constraints include obtaining feed water from beach wells (versus seawater intake), and natural gas fired turbines and/or cogeneration facility (versus electrical supply from Southern California Edison grid). Initial pump test studies indicated that an insufficient quantity of feed water would be available from beach wells along the City of Santa Barbara waterfront. The use of natural gas turbines and/or a cogeneration facility was considered but was deleted from consideration for the temporary emergency facility due to concerns regarding air emissions/quality and the anticipated difficulty in obtaining the necessary air quality permits and required offsets in the available time frame.

7.2.4 Alternate Short-Term Water Supply Options

This section discusses other short-term water supply options that have the potential either singularly,
R4-2 or in combination, to supply up to 10,000 AFY of potable water by early 1992.

Potential long-term alternatives that are not addressed in detail herein because they are not capable of meeting the basic objective of the project -- i.e., being "on-line" by early 1992, include:

- Enlargement of Lake Cachuma (could provide up to 3000 AFY to City of Santa Barbara in the long term if the project is approved, constructed, and sufficient inflow occurs; it is currently expected that this alternative could be available no earlier than 1995 and probably not until 2000 [City of Santa Barbara, Long-Term Water Supply Alternatives Analysis, November 9, 1990 Draft]),

Table 7.2-2. SUMMARY COMPARISON RATING OF ALTERNATIVE TEMPORARY EMERGENCY WATER SUPPLY PROJECTS[a]

	Alternatives			
Environmental Factors[b]	Proposed RO Desalination Project[c]	LT-MVC Distillation Project as Per Proposal[d]	Modified LT-MVC Project[e]	Water Tankering from Western Canada
Chemical Use and Storage	S	S	S	S
Product Water Quality	G	G	G	G
Air Quality	G	S	S	P
Marine Life and Aquatic Biology	S	U	U	U
Sensitive Habitat Onshore	G	G	G	U[g]
Noise	S	S	S	S
Aesthetics	S	P	P	S
Archeology	S	U	S	S
Energy Consumption	S	P	P	P
Construction Impacts	S	P	S	S
Risk of Upset	S	S	S	S
Recreation	S	P	S	S

[a] This comparison is based on the results of the extensive review by the City Alternative Water Supply Review Panel of desalination and tankering alternatives. Refer to the Council Agenda Report in Appendix D of the EIR for more information.
Ratings Key: G = Good; S = Satisfactory; P = Poor; and U = Unknown.

[b] Refer to Appendix D of EIR for textual discussions.

[c] The comparison in the Council Agenda Report (Appendix D) assumed that the proposed Ionics project would use Stearns Wharf for the seawater intake and pipeline, and that the pipeline would cross Mission and Laguna Creeks along Cabrillo Boulevard. The proposed use of the abandoned outfall avoids potential adverse effects during construction and avoids potential impacts to sensitive habitat onshore, and therefore the ratings have been modified from those shown in the Council Agenda Report, as applicable.

[d] Ratings are for this project as proposed to the City.

[e] Ratings have been modified to show improvements that would be gained by adopting use of abandoned outfall as per Ionics' proposed project. It is not known where the LT-MVC project would locate the caisson/clarifier with this modification, or where collected solids would be disposed of.

[f] Summarizes ratings for all three tankering proposals which were reviewed in detail by the Review Panel -- refer to the Council Agenda Report in Appendix D for more information.

[g] Rating is unknown due to likely inability of onshore pipelines to avoid sensitive onshore habitat.

- State water via new pipeline to Lake Cachuma (this project if approved and implemented could provide up to 3000 AFY to the City of Santa Barbara based on the City's maximum State water allotment; it is currently expected that this alternative could be available no earlier than 1995 and maybe not until 2000 [City of Santa Barbara, Long-Term Water Supply Alternatives Analysis, November 27, 1990]).

7.2.4.1 <u>Water Tanker Transport Projects</u>. The only non-desalination alternative which has been identified that could provide up to 10,000 AFY by early 1992 is the water tankering alternative.
R13-4 This alternative is envisioned to involve tankering of fresh water from western Canada. The City
R14-10 Alternative Water Supply Panel considered more than five tankering proposals. The Panel, ERC, and City Council examined three in detail during the emergency water supply alternative selection process.

The City considered proposals by the following companies and/or project teams: Aqua Source; Sun Belt Water, Inc.; and Western Canada Water. All three of these tankering proposals involved the transport of freshwater from the western coast of Canada to Santa Barbara via large ocean tankers. The three proposals considered included the following major components:

- Water collection and loading facilities in Western Canada;

- Tankering of water to Santa Barbara;

- Offshore tanker mooring system, and pipelines to the shore off of the Santa Barbara County coastline between Coal Oil Point and Naples; and

- Onshore electric pump station(s) and interconnecting pipelines between pumps, reservoirs, and existing water distribution/ conveyance systems.

The proposals involved tankers with capacity ratings ranging from approximately 175,000 to 250,000 dead weight tons and ranging in length from 900 to 1200 feet. Tanker delivery frequencies ranged from twice per month to once every ten days. Unloading times were estimated at one to two days and tankers would emit an undetermined amount of air emissions during transport, including time spent in the Santa Barbara Channel, as well as during unloading operations. The tankers would also cause minor increases in marine vessel traffic in the Santa Barbara Channel and corresponding increases in the possibility of a catastrophic vessel collision occurring or a collision with a stationary offshore oil platform or oil tanker. The tankering proposals would result in the following impacts which are not associated with the proposed RO desalination project:

- Large increases in air emissions (SO_x and NO_x) in the South Coast region/Santa Barbara channel associated with fossil fuel combustion by tankers.

- Impacts to environmentally sensitive habitats onshore, including riparian areas, wetlands, and streams associated with onshore pipeline routes between the beach and the storage reservoir(s) (Shulte or Glen Annie) and the probable need for a pumping station on or near the beach.

The tankering projects would require permit approvals from Federal, State, and local agencies as well as Canadian approvals and were considered to be more complex from a permitting standpoint than the desalination projects. In addition, the water tankering projects had projected higher delivered water costs than the desalination proposals. A summary comparison of environmental factor ratings for the proposed desalination project versus the tankering project alternatives which were proposed to the City is included in Table 7.2-2.

7.2.4.2 Other Short-Term Options. Other potential short-term (and in some cases long term) alternatives which have been identified include:

- Increased conservation and use of reclaimed water;

- Groundwater, including deep bedrock wells;

- Temporary State water via Lake Casitas -- Oxnard option; and

- Temporary State water via Lake Casitas -- DWR options involving Pyramid Lake and Lake Piru

Refer to Table 7.2-3 which summarizes the City's existing supply sources, the probable new sources, and speculative sources, all assuming the drought continues. A review of these data indicates that even if all of the sources were available, the City's demand will still significantly exceed the supply. As such, the City is actively pursuing all of the potentially feasible sources. The numbers presented in Table 7.2-3 under "Probable New Sources" include 5000 AFY from a desalination project. If the proposed project is not implemented, the estimated combined "Existing - Good Confidence"/"Probable New Sources" will only be 8312 AF for Water Year (WY) 1992-1993 (versus historical demand of 16,300 AFY). Note that the referenced "Water Supply Plan" was prepared in October 1990 and is a document that is periodically updated as progress is made toward developing emergency water supplies. Each update is prepared for review by City Council. Some of the numbers on the following pages, including Table 7.2-3, may be adjusted in the next update. A description of the City's water supply situation, including potential short term alternatives, follows.

Conservation. Conservation is assumed to play a large role in the City's water supply plan in the event the drought continues, as shown in Table 7.2-3. In the 1992-1993 water year, total supplies, including the proposed desalination project as well as other existing and probable new sources, would provide 13,312 acre feet or 82 percent of pre-drought demand. Thus, conservation of 18 percent is assumed in order to meet 1992 demand. Conservation is not considered to be an alternative to this project, but a critical on-going component of the City's drought response. If conservation along were proposed as a drought response, reductions of 50 to 65 percent of pre-drought demand would have to be achieved.

Conservation can be encouraged in the following ways:

- Providing information to the public on the need for and methods to achieve water savings;

Table 7.2-3. CITY OF SANTA BARBARA WATER SUPPLY PLAN ESTIMATES, 1990 - 1993 [a,b] -- CONTINUED DROUGHT SCENARIO

City Water Supply Source	Water Years 1990 - 1991 AFY	1991 - 1992 AFY	1992 - 1993 AFY
EXISTING - GOOD CONFIDENCE			
Gibraltar Reservoir	500	1000	1000
Cachuma Allotment	5152	4215	0
Cachuma Carryover	1957	1100	0
Mission Tunnel	400	400	300
Montecito Agreement	0	300	300
Existing Wells, Safe Yield	1400	1400	1400
Existing Wells, Overdraft	1200	1200	1200
Alameda & Parma Well, New	336	672	672
Foothill Overdraft	200	400	400
Gibraltar Silt Wells	600	400	0
Reclaimed Phase I	300	500	500
Existing Subtotal	12,045	11,587	5772
PROBABLE NEW SOURCES			
Reclaimed Phase II	0	100	400
Foothill Overdraft	0	1600	1600
Ventura-State Water	1200	1170	540
Subtotal	1200	2870	2540
Desalination Project	0	0	5000
Probable Subtotal	1200	2870	7540
Cumulative Subtotals	13,245	14,457	13,312

Table 7.2-3. CITY OF SANTA BARBARA WATER SUPPLY PLAN ESTIMATES, 1990 - 1993 [a,b] -- CONTINUED DROUGHT SCENARIO (concluded)

City Water Supply Source	Water Years 1990 - 1991 AFY	1991 - 1992 AFY	1992 - 1993 AFY
SPECULATIVE SOURCES			
Mission Tunnel Enhancement	0	0	500
Bedrock Wells, S.B.	500	1000	1500
Speculative Subtotal	500	1000	2000
OVERALL TOTALS	13,745	15,457	15,312

[a] Source: City of Santa Barbara, October 1990. Water Years run from May 15 to May 15.

[b] Assumptions:

1) Normal City demand is 16,300 AFY (potable/reclaimed) which includes new development offset by long-term conservation.

2) Runoff into Gibraltar occurs even in the driest year.

3) Cachuma carryover includes additional water as a result of conservation since implementation of Stage II drought restrictions and Bureau of Reclamation decision not to charge evaporation losses.

4) Pumping new/reactivated wells continues for approximately 3 years.

5) Overdrafting of groundwater supplies requires replenishment of basins with portions of future water supplies.

6) Sufficient rainfall would need to occur to allow the Metropolitan Water District of Southern California to supply State water.

7) The City would utilize 5000 AFY of the capacity of the desalination facility and the balance of the installed capacity would be utilized on a regional basis. The actual capacity of the proposed desalination facility is 10,000 AFY with a 7500 AFY alternate.

- Providing incentives, such as rebates, for installation of water saving devices such as low flow toilets, showerheads, etc.; R17-83 R17-84

- Regulating or prohibiting certain water uses such as street/sidewalk washing, car washing, irrigation, etc.; and R17-85 R17-86 R17-87 R17-88 R17-89

- Increasing water rates to reduce usage.

All of these strategies already are being used to some extent by the City to reduce water demand. The City declared a water emergency and implemented Stage III Drought regulations in February, 1990. The use of potable City water for any outdoor irrigation other than trees and shrubs has been prohibited. The City offers rebates for installation of low flow toilers and distributes low flow showerheads free of charge. In addition, the City implemented a tiered water rate schedule which is progressively more expensive as more water is used. The City has undertaken an aggressive public education campaign including development and distribution of written materials, media advertisements, Hotline information, and drought officers who provide on-site assistance. The City specifically worked with rental property owners to develop information for distribution to tenants. The City has adopted drought emergency regulations allowing usage of greywater systems and developed an information bulletin describing proper design and installation.

All of these efforts in combination were successful in achieving the immediate 45 percent reduction in demand required in February, 1990. However, such a rapid reduction in water usage, relying in part on rate increases and use prohibitions, has resulted in economic hardship to some businesses and individuals, as well as loss of turf areas and some other landscaping throughout the City. These impacts would be expected to increase if such measures were made more restrictive or were continued for several years. Thus the City has developed the Water Supply Plan shown in Table 7.2-3 which proposes to develop sufficient supplies, during a continued drought, to reduce projected shortages to less than 20 percent.

The City will continue its efforts to encourage efficiency improvements through education and incentive programs. To date, toilet rebates and showerhead distribution have resulted in permanent water savings of approximately 500 AFY. All new projects and renovations require the installation of low flow plumbing fixtures. Mandatory retrofit programs for commercial properties or for

residential properties on resale have not been adopted as part of a drought response due both to the high enforcement and inspection costs as well as the limited potential for water savings in the short-term. However, an offsite retro-fit program has been adopted, requiring net water savings for any new project receiving building permits under the Stage III Drought Restrictions. The City continues to require drought tolerant landscaping for new projects. Programs aimed at promoting re-landscaping of existing development with drought tolerant materials are not appropriate while water supplies are critically short.

<u>Wastewater Reclamation</u>. The City is currently reclaiming water at the El Estero Wastewater Treatment Plant -- this water is used for irrigation purposes in place of potable water. This makes potable water that would have otherwise been used for irrigation available for uses that
R7-1 require higher standards of quality. The City is currently in Phase I of the reclamation project
R14-10 which involves 16 service sites and replacement of about 300 AFY of potable water currently in the
R17-76 City. This is projected to increase to 500 AFY by WY 1991-1992. Phase II of the reclamation project is expected to be on-line by WY 1991-1992 and is expected to service an additional 13 or 14 sites and to free up an additional 100 AFY of potable water in WY 1991-1992 and 400 AFY by WY 1992-1993. Phase II will require additional pipelines and an offsite storage reservoir. Because of the nature of reclaimed wastewater (e.g., higher salinity and TDS than potable water), more reclaimed wastewater is required for irrigation than if potable water were used. The uses for reclaimed water are controlled by state water quality standards which limit the potential beneficial uses. The City has studied the possibility of injecting reclaimed water to recharge the City's groundwater basins, but this potential option has been found to be infeasible (currently) due to State Department of Health Services limitations on the use of reclaimed wastewater.

<u>Groundwater</u>. The City currently relies on the following groundwater supplies within the City limits: six wells in Basin I, five wells in Basin II, and one well in Basin III. These wells currently produce a total of about 1400 AFY of safe yield to the City. An additional 1200 AFY is expected to be available through WY 1992-1993 via overdrafting of these old wells. The relatively new Alameda and Parma wells are estimated to produce as follows: 336 AFY in WY 1990-1991; and 672 AFY beginning in WY 1991-1992. The City also receives groundwater via infiltration into Mission Tunnel which connects Gibraltar Reservoir to City storage/treatment facilities. It is estimated that approximately 400 AFY of infiltration water in the tunnel is available to the City. This amount is projected to decrease to 300 AFY by WY 1992-1993. Potential future enhancement of this infiltration is estimated to possibly be capable of producing up to 500 AFY by WY 1992-

1993. The City recently installed groundwater wells in the silt in Gibraltar Reservoir which is currently dry. These wells are currently producing at a rate of approximately 200 AFY, but they are not projected to produce past WY 1991-1992 and the majority of this water is being used for construction/dam strengthening at Gibraltar Dam.

Potential new or increased sources of groundwater for the City include bedrock wells, overdraft of existing wells and new wells in the Foothill Basin, and/or new wells in Basin III. Bedrock wells involves drilling deep wells (750 to 1200 feet in depth) to tap water in bedrock formations underlying the City. The City has developed some wells producing minor amounts of water and other locations are being evaluated. The amount of available water, the well locations, the costs, and the potential environmental effects of bedrock wells are currently unknown. Overdraft of the Foothill Basin is expected by the City to be able to provide 200 AF in WY 1990-1991, 1500 AF in WY 1991-1992, and 2000 AF in WY 1992-1993. The City is considering entering into agreements with a local firm to produce some of this water from new wells in Basin III.

Overdrafting of groundwater supplies is not considered to be desirable and can not be sustained in the long-term without negative consequences. Overdrafting of groundwater will require replenishment of basins with a portion of future water supplies.

State Water Via Lake Casitas -- Oxnard Option. This potential short term emergency water supply option would involve a portion of Santa Barbara's State Water Project allotment being provided to the City of Ventura via a pipeline from Oxnard. Water in Lake Casitas would be piped via an existing 8-inch diameter agricultural water supply line (and/or a new line) to Carpinteria. Carpinteria would reduce its allotment from Lake Cachuma thereby making it available to Santa Barbara. This water supply option is expected to be capable of providing Santa Barbara with 700 AF in WY 1990-1991 and 1000 AF in WY 1991-1992. The City is actively pursuing this option and it may be on line by early 1991. This temporary emergency water supply is not anticipated to be available following WY 1991-1992, and is predicated on sufficient rainfall occurring to allow the trade to occur.

State Water Via Lake Casitas -- DWR Pyramid Lake/Lake Piru Option. The State Department of Water Resources (DWR) identified at the request of the City four potential alternatives for supplying up to 5000 AFY of water to Santa Barbara that would involve releasing water from Pyramid Lake to Lake Piru, and then supplying the water to the City of Ventura by one

of several options (DWR, 1990). Ventura would reduce its allotments from Lake Casitas and this traded water would be transported via pipeline from Lake Casitas to Carpinteria. The water would then be transferred from Carpinteria to Santa Barbara via the South Coast Conduit. These alternatives would require various facilities between Lake Piru and the City of Ventura depending on which alternative is involved. All of the alternatives would involve Ventura trading water from Lake Casitas to the City of Santa Barbara for State water from Lake Piru. All of these alternatives would involve construction of a new pipeline between Lake Casitas and Carpinteria, two new pump stations along the South Coast Conduit between Carpinteria and Santa Barbara, and reversed flow and uncertain response to higher pressures in the South Coast conduit. In addition, these alternatives have potential legal problems regarding water rights and would involve extensive agreements and contracts to be executed between the various parties involved. The water trade could also result in lower quality water being delivered to Ventura than is currently received from Lake Casitas. Detailed feasibility and environmental review would be required before any of these alternatives could be implemented. Due to the complex nature of these alternatives and the relative uncertainty of their being able to supply water by early 1992, these alternatives are not likely to be implemented.

7.3 NO PROJECT ALTERNATIVE

The "No Project" alternative represents a status quo situation whereby the proposed desalination project would not be implemented. This alternative would preclude the temporary increase of 5000 AFY to the City's water supply beginning in WY 1992-1993. This could cause the City's water deficit to increase from an estimated 2988 AFY (about 18% of demand) in WY 1992-1993 to a deficit of about 7988 AFY (49% of demand). These deficit estimates consider the "existing" and "probable new" sources in Table 7-1. This alternative would also preclude the City from providing up to an additional 2500 to 5000 AFY of otherwise unavailable water to other South Coast communities (e.g., Goleta, Summerland, Montecito, and Carpinteria) which also need water to alleviate shortage conditions due to the drought. The No Project alternative in conjunction with continued drought conditions would likely result in significant losses of property, trees and ornamental landscaping, business failures, and potential threats to public health and safety. Water service would likely need to be limited to minimal residential and essential institutional needs and the effects on the City's business community and citizens would likely be significant.

Although no significant unavoidable adverse effects have been identified for the proposed project, the No Project alternative would eliminate construction and the operational impacts which are potentially associated with the proposed project (refer to Section 3.0 of this EIR for more information). While not a significant impact, the No Project alternative would eliminate the 8MW energy demand of the proposed 10,000 AFY desalination project.

7.4 CONCLUSIONS

The City has considered numerous options for supplying a temporary emergency water supply of up to 10,000 AFY by early 1992. Alternatives considered include alternate sources of water, alternate facility technological designs and locations, alternate sizes of facilities, etc. The City is pursuing numerous options for replacing water which is temporarily unavailable due to the extended drought. The City's normal water demand is 16,300 AFY. Considering all of the City's possible sources presented in Table 7.2-3, including desalination ("existing - good confidence"; "probable new sources", and "speculative sources"), the City's historical demand will still significantly exceed the available supply. As such, the various options which have been identified in Table 7.2-3 are not really alternatives to the proposed desalination facility, but are actually options which the City is pursuing and counting on to help offset the current and predicted future water deficit in the City.

The only alternative to desalination that has been identified which could potentially supply up to 10,000 AFY of water by early 1992 is water tankering from western Canada. This alternative was examined in detail by the City Alternative Water Supply Panel, ERC, and City Council and was determined to be less desirable by the City than desalination for various reasons including: potential environmental effects; potential difficulty in receiving necessary regulatory approvals; and the higher cost of delivered water (versus desalination).

Based on the results of the extensive studies undertaken by the City related to the identification of a feasible and environmentally acceptable emergency water supply, the proposed RO desalination facility is clearly the environmentally superior alternative.

UNAVOIDABLE SIGNIFICANT ADVERSE EFFECTS

8.1 INTRODUCTION

The purpose of this section is to discuss unavoidable significant adverse effects which would be expected to occur if the proposed desalination project is implemented. Unavoidable significant adverse effects are considered to be unmitigable to insignificant levels. Normally, approval and implementation of a project that involves these types of impacts (also referred to as Class I impacts) requires a Statement of Overriding Considerations by the Lead Agency for CEQA compliance.

8.2 UNAVOIDABLE SIGNIFICANT ADVERSE EFFECTS

Implementation of the proposed project is not expected to involve any long-term, unavoidable significant adverse effects. Potentially significant long-term (over the project life) effects are predicted for noise, visual resources, and risk of upset/human health. These potentially significant effects are considered to be mitigable to acceptable levels; therefore, they are not considered to be unavoidable significant impacts.

The proposed project will potentially result in adverse effects on traffic and circulation during the construction phase. During month five of the construction phase, up to 74 vehicles per day (65 worker commute vehicles and 9 daily truck deliveries) will be associated with project construction. It is expected that the CalTrans Highway 101 project will be completed prior to the peak of construction for the desalination project, thereby alleviating traffic and circulation impacts somewhat. Scheduling of desalination project construction worker shifts and truck deliveries to avoid peak commute hours are expected to alleviate traffic impacts to insignificant levels. Refer to Sections 2.5.5 and 2.6.1.2 and the Traffic Supplement in Appendix C for more information.

Other short- and long-term adverse effects would be associated with construction and operation of the proposed project, but they are not considered to be unavoidable significant adverse effects. Refer to Section 3.0 of this EIR for more information.

9.1 INTRODUCTION

The California Environmental Quality Act (CEQA) was originally adopted in 1970. CEQA requires the environmental assessment of all discretionary projects. Environmental determinations which can be made include Categorical Exemptions (CEs), Negative Declarations (NDs) and Environmental Impact Reports (EIRs). Both NDs and EIRs usually require the imposition of mitigation measures to reduce the effects of environmental impacts to acceptable levels. There has been nothing in State or local law which requires that the agencies imposing these measures (as conditions of approval) assure that they are carried out through monitoring, reporting or other means.

AB 3180 became effective on January 1, 1989 and amends CEQA to require that, when the decision-making body of the Lead Agency approves a project, a monitoring and reporting program also be adopted to assure that all mitigation measures imposed by either the ND or the EIR be complied with. The purpose of this change is to provide the "missing link" that planners and many others have felt is lacking in the review process by requiring that the Lead Agency confirm that the mitigation measures are carried out.

9.2 MITIGATION MONITORING PROGRAM

Monitoring is required only for those mitigation measures required to reduce significant impacts to a less than significant level (or, if unavoidable, reduce the significance). For this project, the following areas may be subject to significant impacts:

- Onshore Hydrology and Water Quality (accidental chemical releases into Laguna Channel)

- Terrestrial Biology (accidental chemical releases into Laguna Channel)

- Noise (impacts on the Rescue Mission)

- Risk of Upset (accidental chemical releases)

- Cultural Resources

9.2.1 Accidental Chemical Releases

By State law, businesses which engage in hazardous material use, storage and/or transportation must prepare and file a Risk Management Plan (RMP) with the appropriate authorities (California Highway Patrol, Santa Barbara County Division of Environmental Health, City of Santa Barbara
R2-1 Fire Department). The plan includes a reporting and monitoring process for any spills which may
R2-2
R8-2 occur. It also includes automatic shut-off valves and other safety procedures, as warranted by the types and amounts of chemicals stored. Because the RMP is already required by State law, no additional mitigation monitoring will be required.

9.2.2 Noise Impacts on the Rescue Mission

Because of the high-pressure pumps and cooling systems required for the proposed desalination plant, noise mitigation measures will be required. These include relocating exhaust fans to the eastern ends of the Reverse Osmosis trailers and shielding product pumps, air blowers and vacuum
R9-8 pumps to reduce noise impacts on the Rescue Mission. Finally, the EIR requires that the interior of the Rescue Mission be monitored after project start-up to assure that noise levels inside the Rescue Mission do not exceed 45 dBA. In order to provide appropriate monitoring and reporting procedures, a Condition of Approval will be placed on the project requiring that a contract with a qualified acoustical engineer be submitted to the Community Development Department for review and approval prior to the issuance of building permits. The contract will include monitoring within 45 days of plant start-up and, if required interior levels are not met, will require that a report recommending necessary mitigation measures be submitted to the Community Development Department which also includes a schedule for completion of such measures. In addition, during

plan check of the building plans, review will be included to assure that the necessary shielding and placement requirements have been included.

9.2.3 Cultural Resources Monitoring

The Phase I Archaeological Study prepared for the project includes several requirements related to monitoring of project grading and excavation which have been incorporated into the mitigation measures. Again, a Condition of Approval will be placed on the project requiring that a contract with a qualified archaeologist be submitted to the Community Development Department for review and approval prior to issuance of building permits. The contract will include monitoring as outlined in the mitigation measures, a provision allowing the archaeologist to stop work or redirect it to other areas if artifacts are found, and a requirement that a report on the results of project monitoring be submitted prior to issuance of the Certificate of Occupancy.

9.2.4 Marine Water Quality and Marine Biology

The City will work together with the Regional Water Quality Control Board (RWQCB) to determine the specific baseline studies and mitigation monitoring to be undertaken related to the R17-18
National Pollutant Discharge Elimination System permit/Waste Discharge Requirements for the R17-19
combined desalination facility brine discharge and El Estero WWTP effluent. It is currently considered likely that the monitoring program will include baseline water quality and subsea photographic surveys, and quarterly water quality/benthic organism sampling during the operational phase of the project.

9.2.5 Overall Project Monitoring

In addition to the issue areas outlined above, there are several fairly standard measures which have been recommended, primarily related to traffic and dust control and minimizing adverse, but not significant, impacts on recreation. A Condition of Approval will be placed on the project requiring that a mitigation monitoring coordinator be hired by the Applicant to assure that these and the measures outlined above are carried out. A bi-weekly report will be submitted to the Environmental Analyst for review and approval. The coordinator will also be in charge of setting

a pre-construction conference including representatives of the applicant, the contractor, the building inspector, the case planner, transportation staff and other appropriate persons prior to commencement of construction.

10.1 INTRODUCTION

The following is a list of agencies, organizations, and individuals consulted in the course of preparing this EIR. The list is provided in compliance with CEQA Guidelines (Title 14, CCR, Section 15129).

10.2 FEDERAL, STATE, AND LOCAL AGENCIES

10.2.1 Federal Agencies

Environmental Protection Agency, Wetlands, Oceans, and Estuaries Branch, San Francisco, California
NOAA, National Marine Fisheries Service, Los Angeles, California
U.S. Army Corps of Engineers, Regulatory Branch, Los Angeles, California
U.S. Coast Guard, Marine Safety Detachment, Santa Barbara, California
U.S. Coast Guard, Aids to Navigation Branch, Long Beach, California
U.S. Fish and Wildlife Service, Ventura, California

10.2.2 State Agencies

California Coastal Commission, Santa Barbara, California
State Lands Commission, Sacramento, California
California Department of Transportation, Traffic Department, San Luis Obispo, California
California Occupational Safety and Health Administration, Ventura, California
California Department of Fish and Game, Long Beach, California
California Regional Water Quality Control Board, Central Coast Region, San Luis Obispo, California

State Water Resources Control Board, Sacramento, California

Department of Health Services, Office of Drinking Water, Santa Barbara, California

10.2.3 Local Agencies

City of Santa Barbara, Community Development Department

City of Santa Barbara, Public Works Department

City of Santa Barbara, Fire Department

County of Santa Barbara, Health Care Services, Environmental Health

10.3 OTHER ORGANIZATIONS AND COMPANIES

Southern California Edison

Penfield & Smith Surveyors and Engineers

Ionics, Incorporated

Kelco Company

Santa Barbara City College

Staal, Gardner, and Dunne

Southern Pacific Railroad

University of California, Santa Barbara

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DEFINITION OF TERMS

Acre-foot: Measurement of water which is equivalent to approximately 325,851 gallons. This is the amount of water that would cover an acre to a depth of one foot.

Alluvial: Deposited layer of sediment carried and deposited by a running water flow.

Ambient: Surrounding atmospheric conditions.

Armor Rock: Rock used as a barrier around structures to protect against water related effects.

Benthic: Bottom dwelling; i.e., bottom dwelling organisms such as shellfish, starfish, worms, etc.

Cessation: To cease or stop.

Coagulation: To thicken due to molecular clustering/bonding.

Diffuser: As used in the EIR, mechanism to quickly spread and dilute the concentrated brine and El Estero WWTP effluent out over a wide area to avoid dramatic shifts in ocean chemical make up at any one point.

El Nino: Rare occurrence of ocean upwelling of nutrients in a coastal zone associated with a change in ocean currents and an increase in water temperature.

Emergent: Newly formed.

En Echelon: Parallel structural features that are offset like the edges of shingles on a roof when viewed from the side.

Entrainment: To pull into and trap within; e.g., organisms that pass through screens on intake.

Impervious: "Water proof," does not allow water to flow through.

Impingement: The act of striking against; as used in the EIR this refers to marine organisms and/or vegetation (e.g., floating kelp) that could possibly be trapped against the outside of the screens on the offshore intake structure due to the slight inward flow of water.

Outfall: Point of discharge of material; e.g., combined seawater brine and El Estero WWTP effluent, in this case.

Permeability: Ability of a material to allow water to flow through.

Permeate: To pass through.

Perturbations: Disturbance of normal flow of motion.

Plume: A flow that broadens and covers a much wider area.

Senescent: Old, mature.

Substrate: Ground upon which species live/are dependent.

Thermal and Density: Layers of water within ocean of different temperatures and hence, density.

Transect: A sample area.

Transmittance: Ability of material (i.e., water) to allow radiant energy (i.e., sun) to pass through.

DEFINITION OF COMMONLY USED ABBREVIATIONS

AF: Acre-foot.

AFY: Acre-foot per year.

gal.: Gallons.

gpm: Gallons per minute.

HP: Horsepower.

kV: Kilovolts.

lbs.: pounds.

LRDP: Long Range Development Plan - UC Santa Barbara plan of campus growth.

LT-MVC: Low temperature-mechanical vapor compression (desalination technology which involves distillation).

MCL: Maximum Contaminant Level.

MGD: Million gallons per day.

MSL: Mean sea level; average seawater elevation.

Mg/Kg: Milligrams per kilogram.

Mg/l: Milligrams per liter (typically equivalent to ppm).

MW: Megawatts (or million watts).

MWh: Megawatt hours.

NPDES: National Pollutant Discharge Elimination System; a national pollution permit regulatory program.

ppb: Parts per billion.

ppm: Parts per million.

RO: Reverse osmosis.

THM: Trihalomethanes.

TTHM: Total Trihalomethanes.

WDR: Waste Discharge Requirements.

WWTP: Wastewater Treatment Plant.

5 WPAP: Five Year Water Policy Action Plan of the City of Santa Barbara.

APPENDIX A

INITIAL STUDY AND NEGATIVE DECLARATION FOR MODIFICATIONS TO THE CITY OF SANTA BARBARA'S WATER DISTRIBUTION SYSTEM

This appendix contains the CEQA Initial Study and Negative Declaration as reviewed by the City Environmental Review Committee for the modifications to the City's water distribution system which will be required to accommodate distribution of water produced by the proposed 10,000 AFY desalination project. This appendix replaces and supplements the previous version of Appendix A as presented in the Draft EIR.

City of Santa Barbara

California

DATE: February 25, 1991

SUBJECT: CEQA NEGATIVE DECLARATION, PROJECT NUMBER SB-03-91

Pursuant to the State of California Public Resources Code and the "Guidelines for Implementation of the California Environmental Quality Act of 1970," as amended to date, a Negative Declaration is hereby made on the project listed below:

MODIFICATIONS TO THE CITY OF SANTA BARBARA'S WATER DISTRIBUTION SYSTEM

The City of Santa Barbara proposes to modify certain portions of the City's water distribution system in order to accomodate additional water which would result from the operation of the temporary emergency desalination plant.

The modifications would require that a section of existing 12-inch line be replaced and that a new electric pump station be installed at Reservoir No. 1. The proposed electric pump station would be 600 square feet and would have a capacity of approximately 4000 gallons per minute. Four new electric motor pumps (approximately a total of 700 horsepower) would be housed in the station. Special foundation and acoustical design is proposed to minimize ground vibration and noise from the pumps. A 12-foot wide access road is proposed within the existing reservoir site. The access road would run along the southern property boundary.

The new 16-inch pipeline would total approximately 5500 feet in length. The proposed alignment for the new section (approximately 1200 feet) begins at Reservoir No. 1 and continues to the northwest to the end of Ranchito Vista Road. The remaining new waterline would then follow the existing waterline easement to Sycamore Canyon Road, up Sycamore Canyon Road to Stanwood Drive to Conejo Road. Existing waterlines would be used from this point to the Sheffield Reservoir.

The new alignment is being proposed due to the inaccessibility of the route. Significant residential growth has occurred since installation of the original pipeline. Following the existing easement would require routing the pipeline through residential yards and driveways. Pipeline construction will require the excavation of trenches that are estimated to be 3 to 4 feet wide and 4 to 8 feet deep. The pipeline will be welded steel and/or ductile iron pipe.

The reason for the determination that a Negative Declaration is appropriate:

> The Environmental Review Committee found that there is no substantial evidence that there will be significant adverse environmental impacts associated with this project, as amended.

An Initial Study prepared by the Environmental Analyst is available at 630 Garden Street and at the City Clerk's Office at City Hall, De la Guerra Plaza. Comments are accepted until the City Council adopts the Negative Declaration.

Environmental Analyst

[J:/.../LEB/NDPIP]

INITIAL STUDY, SB-03-91

PROJECT DESCRIPTION

Introduction

The City of Santa Barbara and Ionics, Inc. have proposed to build a temporary emergency desalination project in Santa Barbara. The proposed plant is to be located at 525 E. Yanonali Street. The additional water from the project in excess of 8000 AFY would require an upgrade to the City's water distribution system in order to transport the water form the Reservoir No.1 to Sheffield Reservoir.

Background

A Draft Environmental Impact Report (DEIR) has been completed for the proposed temporary desalination project. The public review and comment period for the DEIR closed on January 22, 1991. At the time the document was being prepared, the water distribution system modifications and any new waterline alignments necessary had not been determined. The City of Santa Barbara Department of Public Works Department is now proposing the following modifications. This initial study analyzes and discusses any potential environmental impacts associated with the proposed modifications and new or replaced waterlines.

Description

The modifications would require that a section of existing 12-inch line be replaced and that a new electric pump station be installed at Reservoir No. 1. The proposed electric pump station would be 600 square feet and would have a capacity of approximately 4000 gallons per minute. Four new electric motor pumps (approximately a total of 700 horsepower) would be housed in the station. Special foundation and acoustical design is proposed to minimize ground vibration and noise from the pumps. A 12-foot wide access road is proposed within the existing reservoir site. The access road would run along the southern property boundary.

The new 16-inch pipeline would total approximately 5500 feet in length. The proposed alignment for the new section (approximately 1200 feet) begins at Reservoir No. 1 and continues to the northwest to the end of Ranchito Vista Road. The remaining new waterline, would then follow the existing waterline easement to Sycamore Canyon Road, up Sycamore Canyon Road to Stanwood Drive to Conejo Road. Existing waterlines would be used from this point to the Sheffield Reservoir.

The new alignment is being proposed due to the inaccessibility of the route. Significant residential growth has occurred since

installation of the original pipeline. Following the existing easement would require routing the pipeline through residential yards and driveways.
Pipeline construction will require the excavation of trenches that are estimated to be 3 to 4 feet wide and 4 to 8 feet deep. The pipeline will be welded steel and/or ductile iron pipe.

Discussion

A preliminary geologic hazards investigation was conducted for the proposed pipeline route. The investigation revealed the existence of several faults and two historic landslide areas. Special designs and construction techniques are incorporated to minimize any potential impact to the facility.

Two oak trees would be removed in order to install the new pipeline. These are located approximately 300 feet from Reservoir No.1.

Construction activities are estimated to take place for approximately four months. Construction would be completed by February 1992. Construction equipment would include delivery trucks, backhoe, equipment and dump trucks. Construction personnel will be between five and fifteen persons, depending on the construction activities taking place.

A noise study was completed for the proposed pump station. The report measured ambient noise at the site and studied noise levels emitted by similar pumping equipment. The report concluded with recommended acoustical design criteria.

A Phase One Cultural Resources Study was also completed for the entire project area. Staff has reviewed the study and forwarded it to the Landmarks Committee for their meeting on February 20.

Conclusion

The City of Santa Barbara has assumed the role of Lead Agency consistent with the provisions in CEQA. Because a portion of the proposed project area is within the County's jurisdiction, staff will continue to consult and coordinate the environmental review with County staff.

Based on the conclusions reached in the initial study, review of the technical reports and incorporation of the recommended project amendments, staff recommends that a Draft Negative Declaration be prepared for the proposed project.

PROJECT NO. SB-03-91

ENVIRONMENTAL CHECKLIST FORM

To Be Completed by Lead Agency

I. **PROJECT NAME: Proposed Pump Station and Water Main Replacement**

II. **NAME, ADDRESS, TELEPHONE OF APPLICANT: City of Santa Barbara**
Public Works Department
630 Garden Street
Santa Barbara, CA 93101
(805) 564-5366

III. **ENVIRONMENTAL IMPACTS:**

(Explanation of "yes" and "maybe" answers on attached sheets)

	YES	MAYBE	NO
1. Geology and Soils. Will the proposal result in:			
a. Unstable earth conditions or changes in geologic substructures?	___	___	X*
b. Disruptions, displacements, compaction or over-covering of the soil?	___	___	X*
c. Change in topography or ground surface relief features?	___	___	X
d. The destruction, covering or modification of any unique geologic or physical features?	___	___	X
e. Any increase in wind or water erosion of soils, either on or off the site?	___	___	X
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	___	___	X
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, ground failure, mud-slides or similar hazards?	___	___	X*

2. Air Quality. Will the proposal result in:

a. Substantial air emissions or deterioration of local or

		YES	MAYBE	NO
3.	**Water.** Will the proposal result in:			
a.	Changes in currents, or the course of direction of water movements, in either marine or fresh water?	___	___	X
b.	Changes in absorption rates, drainage patterns or the rate and amount of surface water runoff?	___	___	X
c.	Alterations to the course or flow of flood waters?	___	___	X
d.	Change in the amount of surface water in any water body?	___	___	X
e.	Exposure of people or property to water related hazards such as flooding or tsunamis?	___	___	X
f.	Substantial reduction in the amount of water available for public water supplies?	___	___	X
g.	Discharge into surface waters, or in the alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	___	___	X
h.	Change in the quantity of ground waters, either through direct additions or withdrawals or through interception of an aquifer by cuts or excavations?	___	___	X
i.	Alteration of the direction or rate of flow of ground waters?	___	___	X
4.	**Plant Life.** Will the proposal result in:			
a.	Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops and aquatic plants)?	___	___	X*
b.	Reduction in numbers or habitat area of any unique, rare or endangered plant species?	___	___	X
c.	Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?	___	___	X
d.	Reduction in acreage of any agricultural crop?	___	___	X
5.	**Animal Life.** Will the proposal result in:			
a.	Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	___	___	X
b.	Reduction of numbers or habitat area of any unique, rare			

		YES	MAYBE	NO
	or endangered animal species?	_	_	X
c.	Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	_	_	X
d.	Deterioration to existing fish or wildlife habitat?	_	_	X
6.	Noise. Will the proposal result in:			
a.	Increases in existing noise levels?	_	_	X*
b.	Exposure of people to severe noise levels?	_	_	X
7.	Light and Glare. Will the proposal produce new light and glare?	_	_	X
8.	Land Use. Will the proposal result in:			
a.	A substantial alteration of the present or planned land use of an area?	_	_	X*
b.	Non-conformance with existing zoning and general plan designations?	_	_	X*
9.	Natural Resources. Will the proposal result in:			
a.	Increases in the rate of use of natural resources?	_	_	X
b.	Substantial depletion of any nonrenewable natural resource?	_	_	X
10.	Risk of Upset. Will the proposal involve:			
a.	A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset condition?	_	_	X
b.	Possible interference with an emergency response plan or an emergency evacuation plan?	_	_	X
11.	Population. Will the proposal alter the location, distribution, density or growth rate of the human population of an area?	_	_	X
12.	Housing. Will the proposal affect existing housing, or create a demand for additional housing?	_	_	X
13.	Transportation/Circulation. Will the proposal result in:			

a.	Generation of substantial additional vehicular movement?	_	_	X
b.	Effects on existing parking facilities, or demand for new parking?	_	_	X
c.	Substantial impact upon existing transportation systems?	_	_	X
d.	Alterations to present patterns of circulation or movement of people and/or goods?	_	_	X
e.	Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	_	_	X
f.	Alterations to waterborne, rail or air traffic?	_	_	X

14. Public Service. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:

a.	Fire protection?	_	_	X
b.	Police protection?	_	_	X
c.	Schools?	_	_	X
d.	Parks or other recreational facilities?	_	_	X
e.	Maintenance of public facilities, including roads?	_	_	X
f.	Other governmental services?	_	_	X

15. Energy. Will the proposal result in:

a.	Use of substantial amounts of fuel or energy?	_	_	X
b.	Substantial increase in demand upon existing energy sources or require the development of new sources?	_	_	X

16. Utilities. Will the proposal result in a need for new systems, or substantial alterations to public utilities (i.e. water, sewer, power, storm drainage, telephone)?	_	_	X

17. Human Health. Will the proposal result in:

a.	Creation of any health hazard or potential health hazard (excluding mental health)?	_	_	X
b.	Exposure of people to potential health hazards?	_	_	X

	YES	MAYBE	NO
18. Visual. Will the proposal obstruct any scenic vista or view open to the public or create an aesthetically offensive site open to public view?	___	___	X*
19. Recreation. Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	___	___	X
20. Cultural Resources.			
a. Will the proposal result in the alteration of or the destruction of a prehistoric or historic archaeological site?	___	___	X*
b. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure or object?	___	___	X
c. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?	___	___	X
d. Will the proposal restrict existing religious or sacred uses within the potential impact area?	___	___	X
21. Mandatory Findings of Significant Environmental Effect.			
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of major periods of California's history or prehistory?	___	___	X
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	___	___	X
c. Does the project have environmental effects which are individually limited but cumulatively considerable?	___	___	X
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	___	___	X
22. Alternatives to the Proposed Action. Does the project require the discussion and evaluation of a range of reasonable alternatives which could feasibly attain the basic objectives of the project?	___	___	X

IV. DISCUSSION OF ENVIRONMENTAL EVALUATION AND MITIGATION MEASURES:

See attached narrative description of the environmental impacts.

* = An explanation is attached although a "no" is indicated.

V. RECOMMENDATION OF THE ENVIRONMENTAL ANALYST:

On the basis of this initial evaluation:

___ I find the proposed project will NOT have a significant adverse environmental effect, and a NEGATIVE DECLARATION should be prepared.

X I find that although the proposed project could have a significant adverse environmental effect, there would not be a significant effect in this case if the project amendments described herein are included in the project. A NEGATIVE DECLARATION should be prepared.

___ I find that the proposed project MAY have a significant adverse environmental effect, and an ENVIRONMENTAL IMPACT REPORT should be prepared.

___ I find that the project MAY have a significant adverse environmental effect and the impact is described in the

Leslie Bischel — Signature 2/22/91 — Date

DETERMINATION OF THE ENVIRONMENTAL REVIEW COMMITTEE

Draft Negative Declaration — (Action) 2/22/91 — (Date)

[J:\ENVREV\REV\IS\ ]

PROJECT NO. SB-

ENVIRONMENTAL IMPACT DISCUSSION

1. Geology and Soils - a,b,g

The Master Environmental Assessment indicates that the project site includes sections of the Montecito Fault as well as other inferred faults. It also contains areas of moderately high, highly and very highly expansive clay soil. These soils also have a high potential for soil creep and conditional erosion potential.

A geological report was prepared for the project site by K-C Geotechnical Associates (Attachment 3). The study was reviewed by Robert Sedivey, Senior Plan Check Engineer, who concurred with the report's information and conclusions.

The report concluded that the geologic conditions within the project area indicate the existence of potential geological hazards which could impact the alignment, design and/or the construction of the waterline. These include landslide movement, soil creep and ground shaking by earthquakes from nearby or regional faults.

The report recommends that a design level geotechnical investigation be completed to further evaluate the depth and extent of the creep prone soils, which should be avoided. The report also recommends the use of flexible couplings and welded cast iron pipe in area of slides or faults and monitoring of horizontal movement with slope inclinometers.

With the incorporation of the recommended project amendments (A.1) which address these issues, no significant impacts should occur.

2. Air Quality - a

Additional emissions of air pollutants will result during the construction phase of the project. Given the size of the site and the scope of the construction activities, the level of these emissions are not considered to be significant. With the incorporation of standard dust control measures (Amendment A.2), no significant impacts are expected to occur.

4. Plant life - a

Directly west of Reservoir No. 1 is an area of Southern Oak Woodland. The installation of the pipeline within the new alignment will require the removal of two oak trees in this area. Construction activities may also impact other adjacent oak trees. Project amendment are recommended requiring that these trees be replaced per City replacement standards and that remaining oak trees be protected using standard protection

measures. With the inclusion of these amendments (A.6), no significant impacts are expected to occur.

6. Noise - a

The proposed pump station would be located in a generally quiet residential area. Particular noise sensitive uses include a residence directly adjacent to the proposed site for the station and approximately 20 feet from the property boundary.

An Initial Noise Control Analysis (Attachment 4) was completed for the approximate location of the proposed station. This study determined the ambient noise levels, the projected level of noise produced by the motors in the pump station and recommended acoustical design measures to achieve an acceptable noise level.

No significant increases in ambient noise should occur with incorporation of these measures (Amendments A.3 and A.6) as project amendments.

8. Land Use - a,b

The proposed area which would be utilized for the new pipeline alignment is either vacant and too steep for development or a pipeline easement already exists. The proposed route is not expected to conflict with any of the existing or planned uses. The pump station will be located within the existing reservoir boundaries.

Chapter 28.94.030(X) of the Zoning Ordinance requires a Conditional Use Permit for a public or quasi-public facility in any zone. However, on July 24, 1990, the City Council adopted Ordinance No. 4640 which suspended local discretionary review requirements for City sponsored temporary emergency water supply projects. The proposed project is in conjunction with the proposed temporary emergency desalination project and this Ordinance would apply. Therefore, no discretionary permits will be required.

Approximately 300 feet of the newly aligned pipeline, as well as sections where an easement exists, are in the County's jurisdiction. Staff has discussed this project with the County Environmental Review staff and they concur with our direction. In addition to this consultation, the initial study, technical studies and any draft environmental document prepared for the project will be sent to them for review and comment.

Staff has concluded that there are no significant adverse impacts related to land use.

13. Transportation/Circulation

During construction there will be between 5 and 15 people on the site. There is little parking space available in the project area. Parking on both sides Cedar Street creates a very narrow

travel lane. The additional parking demand could result in short term construction impacts. The applicant shall require that all construction employees park somewhere other than the site or Cedar Street. In addition, parking shall be limited to one side of Cedar Street on the day(s) when the street is being used to move construction equipment onto or off the site. If necessary, the applicant shall coordinate and require carpooling to the site.

No significant impacts should occur with implementation of these measures (Amendment A.4).

18. Visual - a

A portion of the proposed project area is designated in the MEA as a visually sensitive area. The pipeline will be buried and will not impact the areas visual corridor. Plans for structure(s) and landscaping shall be reviewed and approved by the Architectural Board of Review. The enclosure for the pumping facility shall be of the smallest size consistent with good engineering and design practices and shall not exceed 9 feet in height above the current grade, shall be constructed such that the exterior-facing materials are of a color, texture and composition that will blend with the current hillside palette, and shall be landscaped on the north, west and south sides in such a manner as to blend with the surrounding vegetation. No shiny exterior surfaces shall be permitted on any side or the roof and there shall be no night lighting installed.

With the incoporation of these design standards (Amendment A.12), no significant adverse visual impacts should occur.

20. Cultural Resources - a

The proposed locations for portions of the new pipeline and replacement pipeline are within an area of prehistoric and Native American sensitivity as mapped by the MEA Cultural Resources Map. A Phase I Report was completed for the area by Science Applications International Corporation.

No prehistoric remains were found during the field investigation, although the records search and archaeological survey indicate a potential for the project to affect prehistoric resources in several locations. The report recommends project amendments during construction to halt construction in the event that any remains are uncovered, consultation with a qualified archaeologist and observance of any subsequent recommendations. In addition, monitoring is recommended for portions of the surveyed area.

The report also indicated that the proposed route of the pipeline would approach two significant or potentially significant historic features. It recommended that particular care be given to avoid any possible damage to these resources during the installation of the pipeline.

No significant impacts are expected to occur with incorporation of the measures recommended in the Phase One Report as project amendments (A.8, A.9 and A.10).

STAFF RECOMMENDATION

A. Staff recommends that the following amendments be incorporated into the project description:

1. A design-level geotechnical investigation shall be completed and all resultant recommendations incorporated in the final project alignment and design. Compliance with this amendment shall be established prior to the issuance of any permits, including but not limited to:

   a. Flexible couplings and/or welded cast-iron pipe will be used where the waterline crosses slides and fault locations.

   b. Slope inclinometers will be installed on slide masses and the meters shall be monitored on a regular basis.

2. As dust problems occur, they shall be minimized by wetting the construction area surface with non-potable water or other means not involving the use of water. Longer term control would include replanting lost vegetative cover or simply restoring any paved surface. This requirement shall be included in the construction documents.

3. Construction activities shall be muffled to minimize noise effects. Construction activities should take place only between 7 AM and 7 PM and shall be prohibited on Saturday, Sunday, and holidays. This requirement shall be included in the construction documents.

4. Construction employees shall be required to park somewhere other than on the site or Cedar Street. If necessary, the applicant will make parking arrangements elsewhere and coordinate carpooling.

5. The Contractor shall complete the following prior to the beginning of construction:

   a. Obtain any necessary permits from other jurisdictions.

   b. A pre-construction conference shall be scheduled by the Contractor. The conference shall include the Planning Division, Public Works Department (Transportation and Engineering) and Building Division.

6. All recommendations in the February 8, 1991 Walker, Celano & Associates Noise Control Analysis shall be incorporated into the project design. The design and construction of the pumping facilities shall be such that the operation of these facilities will not be detectable at the property lines by persons with

normal hearing acuity. Should the installed design not be successful in achieving this standard for detectable noise and vibration, additional mitigation measures shall be installed until this condition is met.

7. The following measures to protect oak trees shall apply:

   a. During construction, protection measures shall be provided including, but not limited to, fencing of the area surrounding the trees.

   b. Any oak trees removed shall be replaced on a 10:1 basis. If possible, the replacement oaks shall utilize seed from the on-site grove.

   c. Fencing or protective barriers shall be placed around the oak trees during construction. After initial hand construction, if necessary, each tree shall be enclosed with a five foot high fence at the dripline.

   d. All excavation within the dripline of the oak trees shall be done as recommended by an oak tree specialist and approved by the Community Development Director.

   e. Any oak tree roots encountered shall be cleanly cut and sealed with a tree seal compound as recommended by an oak tree specialist.

   f. No heavy equipment, storage of materials, disposal of liquids or parking shall take place under the dripline of the oak trees.

8. All project excavation areas will be subject to the following:

   In the event that prehistoric or historic remains are encountered during construction, all work in the area of the discovery shall be halted and a qualified archaeologist shall be consulted to assess the nature and significance of the resource. If a Native American resource is found, a Native American selected in accordance with the Cultural Resources Section of the City Master Environmental Assessment shall be consulted. If the resource is considered significant, further construction at that location shall not occur until a Phase 3 mitigation program has been designed and implemented in accordance with the Cultural Resources Section of the City Master Environmental Assessment. The results of all monitoring activities shall be submitted to the Environmental Analyst upon the project's completion.

9. All ground disturbing construction activities in the project area from the pump station and access road to the intersection of Conejo Road and Stanwood Drive shall be monitored by a professional archaeologist.

10. Appropriate measures will be taken to avoid damage to Jack's Fountain and City Reservoir No.1 during construction of the pump station, access road and pipeline installation. If the proposed action would result in modification to Jack's Fountain, the proposed modification must be submitted to the City Landmarks Committee for review.

11. A program for monitoring of mitigations and conditions of approval shall be presented to the ERC after reviews and final approval of the project by the ABR and the City Council , and with ERC approval, shall be incorporated into the documentation on file for this project.

12. Plans for structure(s) and landscaping shall be reviewed and approved by the Architectural Board of Review. The enclosure for the pumping facility shall be of the smallest size consistent with good engineering and design practices and shall not exceed 9 feet in height above the current grade, shall be constructed such that the exterior-facing materials are of a color, texture and composition that will blend with the current hillside palette, and shall be landscaped on the north, west and south sides in such a manner as to blend with the surrounding vegetation. No shiny exterior surfaces shall be permitted on any side or the roof and there shall be no night lighting installed.

B. Staff recommends that the Environmental Review Committee make the following findings:

1. That with the project amendments, there will be no significant environmental impacts as a result of this project; and

2. Pursuant to Section 15070 of the California Environmental Quality Act Guidelines, the ERC direct staff to prepare a Draft Negative Declaration.

ATTACHMENTS:

1. Site Plan
2. Vicinity Map
3. Geotechnical Study, February 7, 1991, K-C Geotechnical Associates
4. Noise Analysis, February 8, 1991, Walker, Celano & Associates
5. Phase I Cultural Resources Study, February 8, 1991, SAIC

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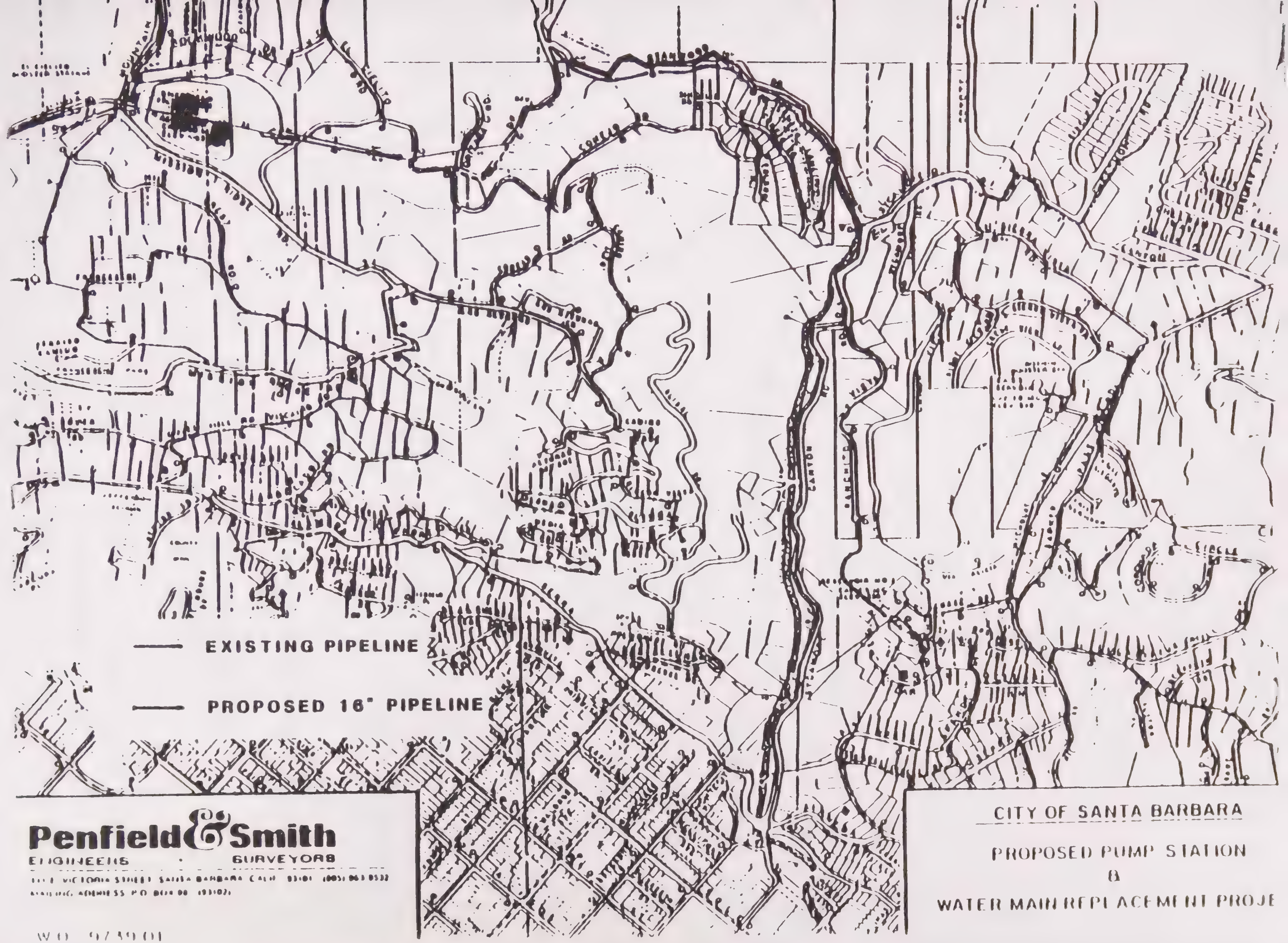
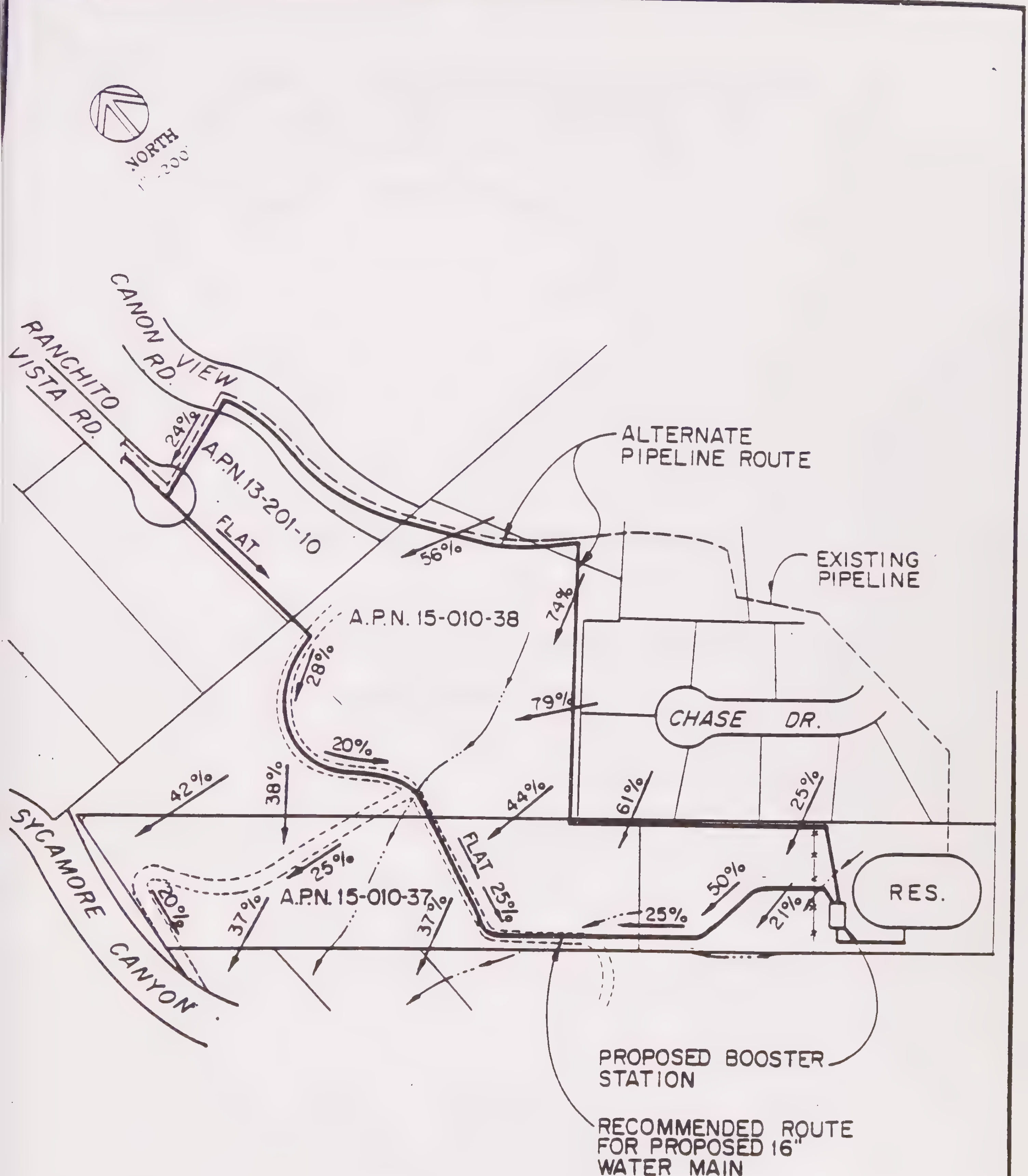

EXISTING PIPELINE
PROPOSED 16" PIPELINE
Penfield & Smith
ENGINEERS · SURVEYORS
CITY OF SANTA BARBARA
PROPOSED PUMP STATION
&
WATER MAIN REPLACEMENT PROJE



CITY OF SANTA BARBARA
PROPOSED PUMP STATION
WATER MAIN REPLACEMENT PROJECT

Penfield & Smith
ENGINEERS · SURVEYORS

WALKER, CELANO & ASSOCIATES
Consultants on Acoustics
2659 Townsgate Road, Suite 112
Westlake Village, CA 91361
805/497-1902
FAX 805/495-9933

DRAFT INITIAL NOISE CONTROL ANALYSIS

FOR

DESALINATION FACILITY PUMP AT RESERVOIR #1

SANTA BARBARA, CALIFORNIA

February 8, 1990

Prepared For

Santa Barbara Public Works Department
630 Garden Street
Santa Barbara, CA 93101

INTRODUCTION

The City of Santa Barbara Public Works Department proposes to install a water booster pump near Reservoir #1, in association with the pending desalination facility. Because the proposed pump location is near existing residences in a generally quiet area, it has been requested that an acoustical analysis be conducted to establish noise control requirements for the facility. The purpose of this study is to determine existing background noise levels in the vicinity of the proposed pump, to establish a noise emissions criterion for the pump, and to provide guidance in design of the pump facility to satisfy the noise limits.

AMBIENT CONDITIONS

The pump is proposed to be located in a pump house near the southwesterly corner of the Reservoir #1, just off Cedar Lane in the hills above Santa Barbara. Existing noise sensitive uses in the area include residences on Cedar lane and on the hillside above the site. Of particular importance is one residence on the Cul de Sac of Cedar Lane, which backs up to the Reservoir property line adjacent to the proposed pump site. The setback from the residence to the Reservoir fence line is estimated at 20-25 ft. A second residence is similarly close to the fence line, but further south, away from the proposed pump site. Homes overlooking the site from the northeast are several hundred feet away, but are also considered.

Ambient noise levels were determined by acoustic measurements taken on February 6, 1990 between 4:30 p.m. and 8:30 p.m. Measurements were taken at three positions:

1. Approximately 15 ft inside the reservoir south fence line, 35 ft inside the reservoir west fence line, directly opposite the nearest residence. The elevation was estimated to be 5 ft above that of the residence pad, with the microphone on a 5 ft stand.

2. On the south side of the reservoir proper, looking over the residences to the City and coast line to the southwest.

3. Approximately 60 ft inside the facility gate, 15 ft from the fence line.

The measurements were taken with a Rion type NA-29E precision sound level meter octave band real time analyzer connected to a PC compatible Epson portable computer. Typically, each of the measurement periods was 15 minutes total duration and consisted of a series of 900 consecutive 1 second time average ($L_{eq\ 1\ second}$) samples. The analyzer simultaneously measured the overall A-weighted level and the A-weighted level in each of the octave bands over the range of 31 Hz to 8000 Hz. At the end of the 15 minute period, the analyzer calculated the statistical levels for the measurement period and all of the measured and calculated data were transferred to the computer for storage on magnetic disk. Prior to and periodically throughout the measurements, the overall calibration of the system was checked with a Bruel & Kjaer type 4230 acoustic calibrator.

Results of the measurements are shown in detail on the appended graphs. In summary, the overall results were as shown in Table 1 below.

Location	Time	L_{90}	L_{eq}	L_1
Pos. #1	16:50-17:05	34.8	42.3	49.8
Pos. #1	17:26-17:41	34.2	43.6	55.5
Pos. #2	19:00-19:15	38.0	39.9	44.5
Pos. #3	19:36-19:51	33.1	41.2	51.8
Pos. #3	19:58-20:13	33.7	39.9	49.4

Table 1
Summary of On-Site Acoustic Measurement Results

In Table 1, L_{90} represents the background noise level, resulting from quasi-continuous distant sources, eliminating identifiable events such as nearby activity, aircraft overflights, etc. L_{eq} is the ambient noise level, or time average of all acoustic signals affecting the measurement. L_1 is the approximate maximum noise resulting from individual events of "finite" duration. Reference to the time line plots will demonstrate that occasional short duration noises, such as doors closing or birds chirping, exceed this maximum level for brief periods.

Measurements were not extended past 8:30 p.m. because of interference by barking dogs, apparently aroused by our presence. It has been our experience that nighttime noise levels in Santa Barbara hills do not decrease significantly after 8-9 p.m. due to refraction of truck and other vehicle noise in the inversion-prone night air.

It is our conclusion that the background noise level (A-weighted Sound Level) is well represented by 33 dB in the locations shielded behind the residential structures, and by 38 dB at locations with direct exposure to the City below.

Most of the spectral plots demonstrate that the ambient and background noise is characterized by smooth, monotonically decreasing level vs frequency. There were no audible tones or repetitive noises (other than barking dogs) observed during the measurements.

CRITERIA

Various noise criteria may be applied to noise emitted by fixed sources such as pumps. For purposes of avoiding adverse community reaction to a newly introduced noise source in an existing neighborhood, the best criterion to pursue is not exceeding the existing background noise level. Additionally, the spectral and temporal character of the introduced noise should not differ significantly from that of the existing acoustic environment. In other words, the introduced noise should be free of pronounced spectral peaks and periodic modulations in level.

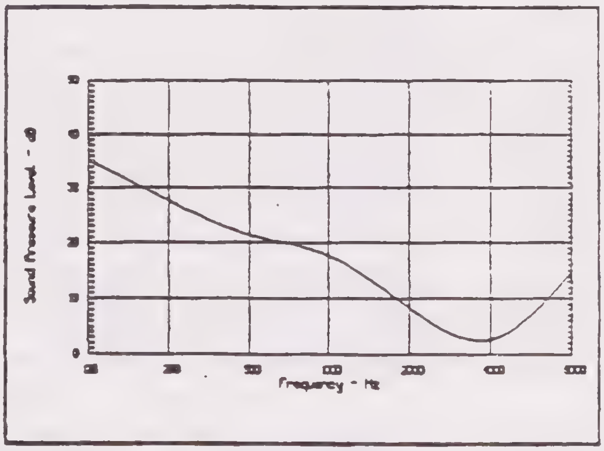


Figure 1 - Pure Tone Criterion Curve for Shielded Residential Locations

For design purposes, pump noise should be limited to approximately 30 dB at all residential locations, with pure tone components limited to values below criterion curve Figure 1. It may be noted that at around 4,000 Hz, the audibility criterion is quite stringent. However, noise attenuation at this frequency is relatively easily achieved.

PROJECT NOISE

The proposed pumping facility will have a capacity of approximately 4,000 gallons per minute, achieved with 3-4 approximately 200 hp vertical axis pumps. In order to assess noise levels produced by these pumps, measurement data from four other pumps, ranging in size from 75 to 300 hp were scaled by measurement distance and by 10 log(hp) per ASHRAE recommendations was averaged. Results, including the individual measured data scaled to 200 hp and 17 meters (the approximate distance from the pump to the nearest residence) are shown in Figure 2.

When two, three or four pumps are operated simultaneously, the noise level will increase by 3, 5 and 6 dB respectively. Relative to the criterion based on the ambient noise, the overall A-weighted level is potentially 64 dB relative to a 30 dB criterion, and the spectral peak at 2,000 Hz is potentially 60 dB relative to a criterion of 8 dB. Thus, the pump enclosure should provide an overall noise reduction of approximately 34 dB, and high frequency noise reduction of 52 dB. These are readily achieved degrees of acoustic isolation, provided proper attention is paid to sealing around access openings and baffling or silencing of ventilation openings.

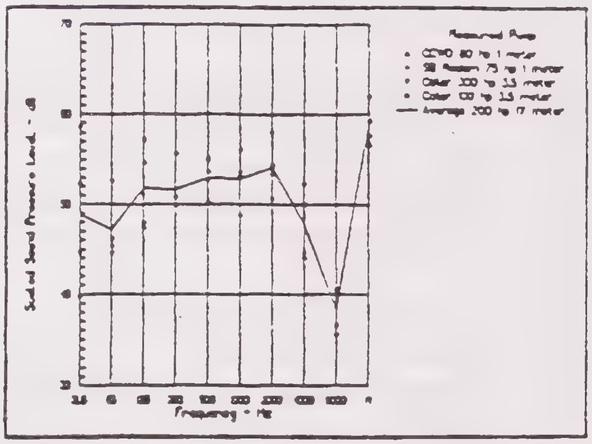


Figure 2 - Pump Noise Data Scaled to 200 hp, 17 meters and Averaged

NOISE CONTROL

As was indicated in the preceding section, the pump housing should provide overall noise reduction of 34 dB, with high frequency attenuation of approximately 52 dB to render 2,000 Hz tone noise inaudible during quiet nighttime conditions at the nearest residence. A fairly simple pump enclosure will provide this degree of noise reduction. Design guidelines are as follows:

- Wall construction should be cement stucco or masonry block construction with an inner surface of 5/8" gypsum board on RC-1 resilient channels. The wall cavity should be filled with R-11 insulation blanket.

- The roof should be 5/8" plywood with built-up roofing. A separately framed 5/8" gypsum board ceiling should be provided, with the cavity filled with R-19 insulation blanket.

- Sound absorbing treatment (1" fiberglass with expanded metal facing, spray-on material such as Pyrok, etc.) should be applied to the exposed upper wall and ceiling surfaces to prevent reverberant buildup of noise in the pump house.

- Access doors should be relocated to the north side of the building (facing away from the nearest home) if possible. If this is not possible, then a barrier wall should be built at the south property line to shield the home from the pump house. The doors should be filled hollow metal doors with full perimeter seals and a removable astragal.

- Ventilation openings should be located near ground level on the north side of the building, and should be fitted with silencers as determined based on required opening area. Acoustic louvers may be adequate, but it is possible that sound traps or baffles will be required.

- A vibration break should be provided in the slab between the pumps and the outer wall of the pump house.

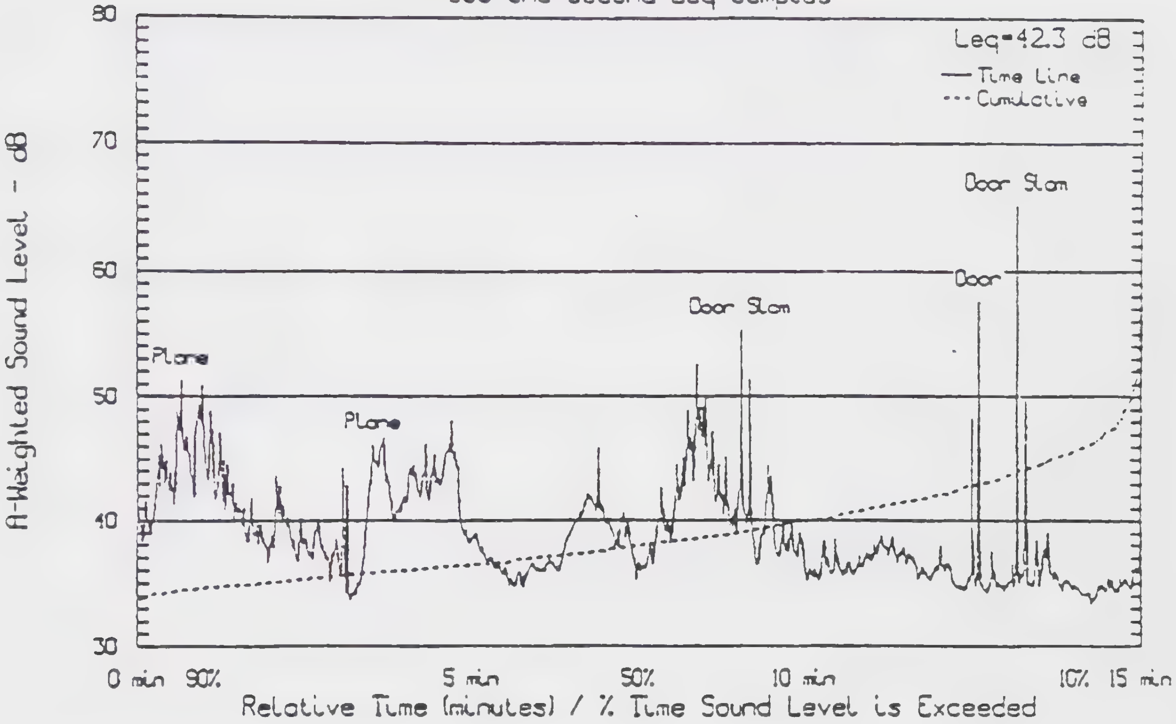
The above are general guidelines only. The design of the facility should be reviewed for acoustical integrity prior to construction.

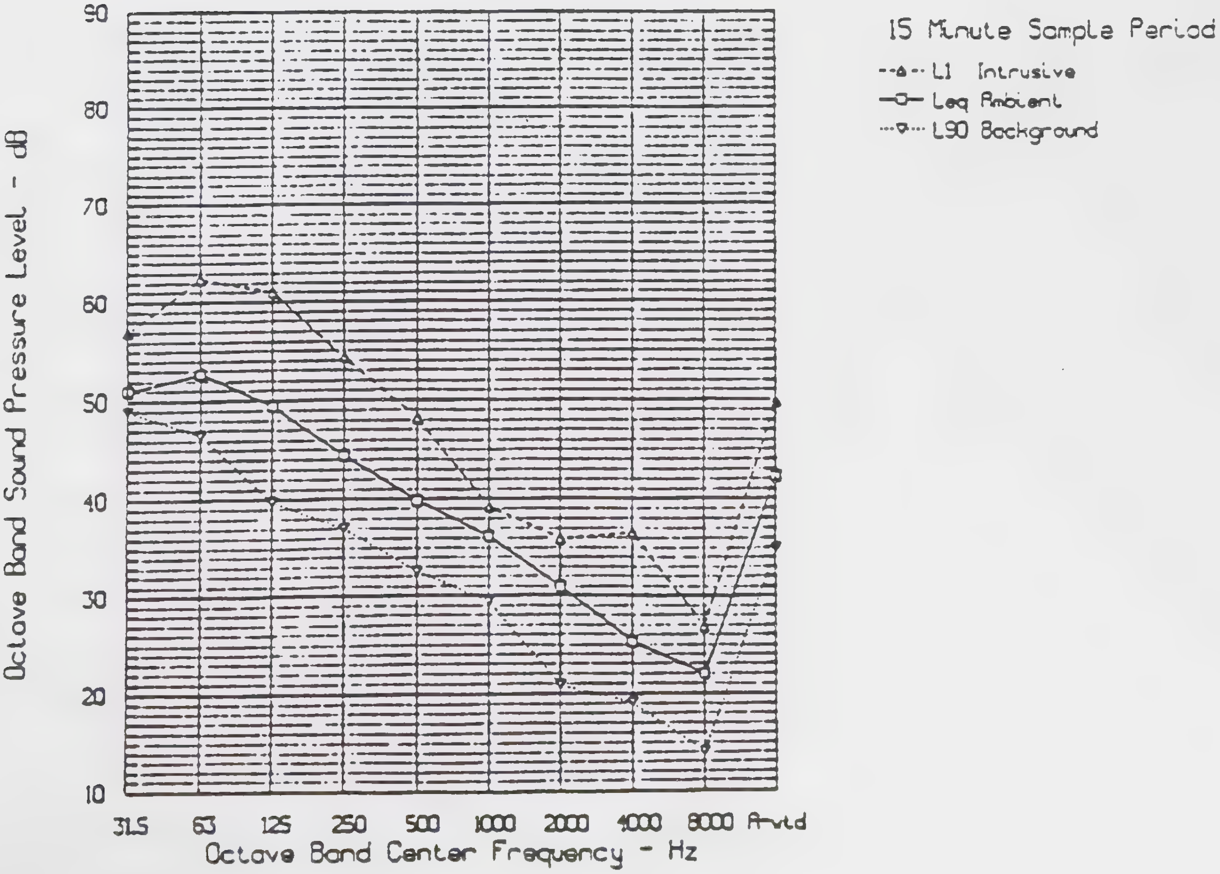
Respectfully submitted,

Bruce Walker

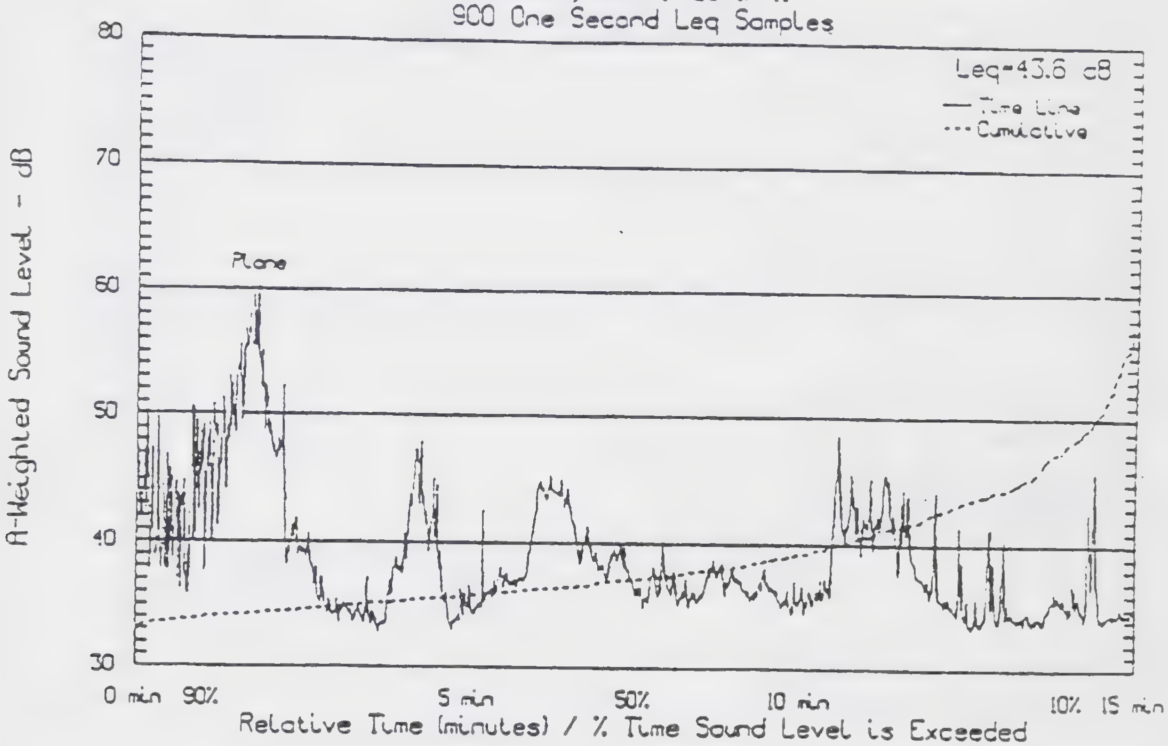
Bruce Walker, Ph.D.
Member, INCE

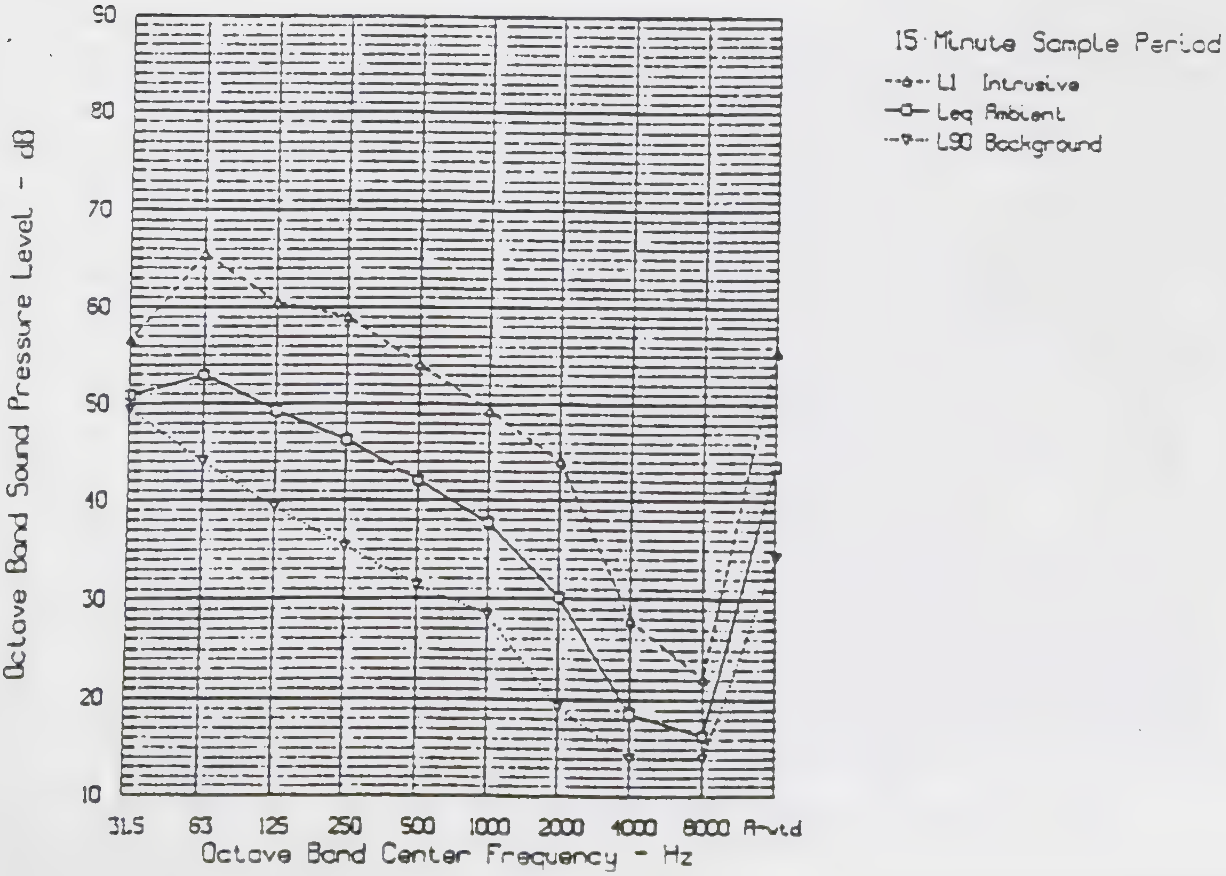
Santa Barbara Desalination Facility
Pump House at Reservoir No. 1
Measurements 40 ft NE of Nearest Residence
Feb 5, 1991 16:50-17:05
900 One Second Leq Samples



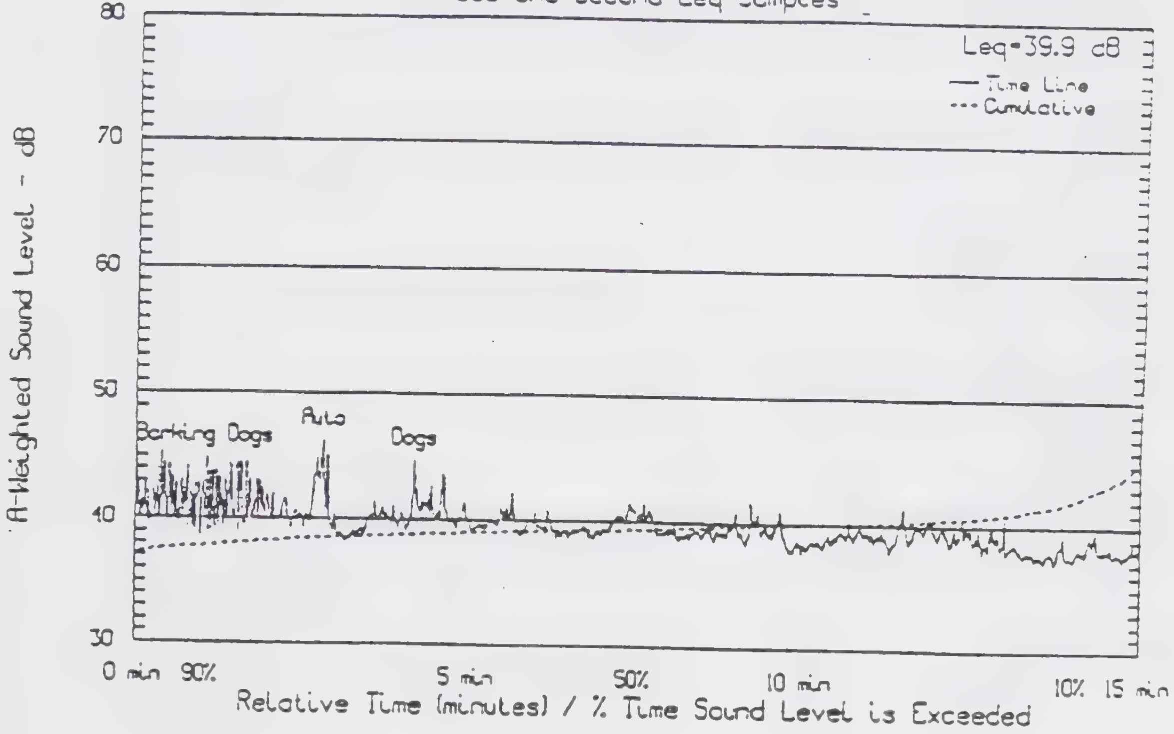


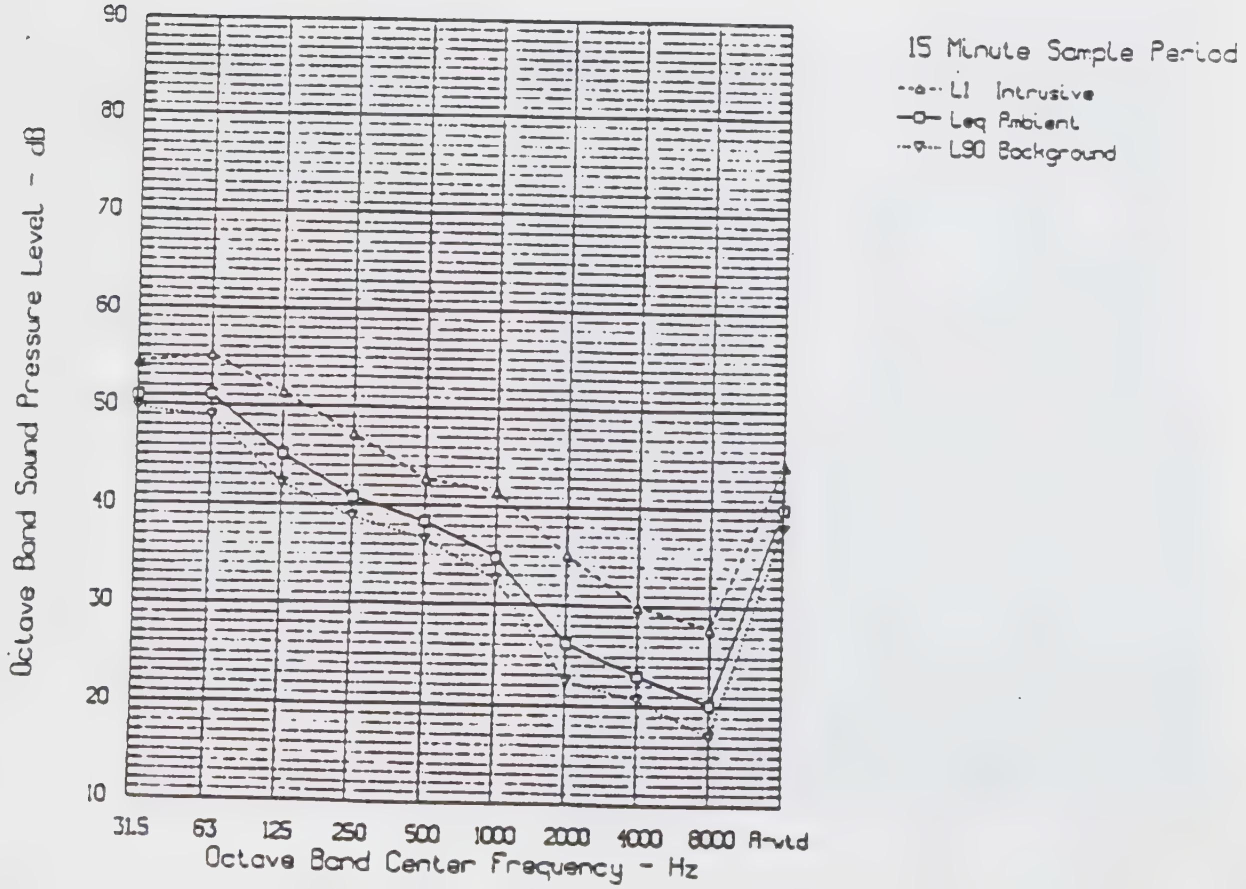
Santa Barbara Desalination Facility
Pump House at Reservoir No. 1
Measurements 40 ft NE of Nearest Residence
Feb 5, 1991 17:26-17:41
900 One Second Leq Samples



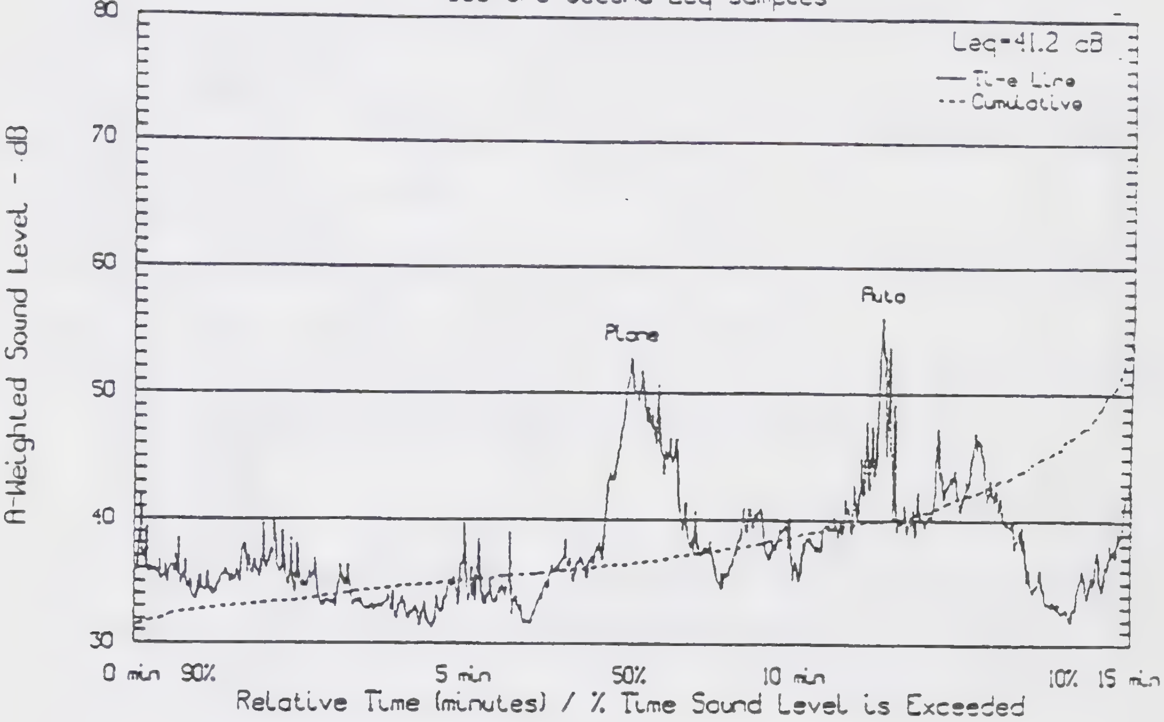


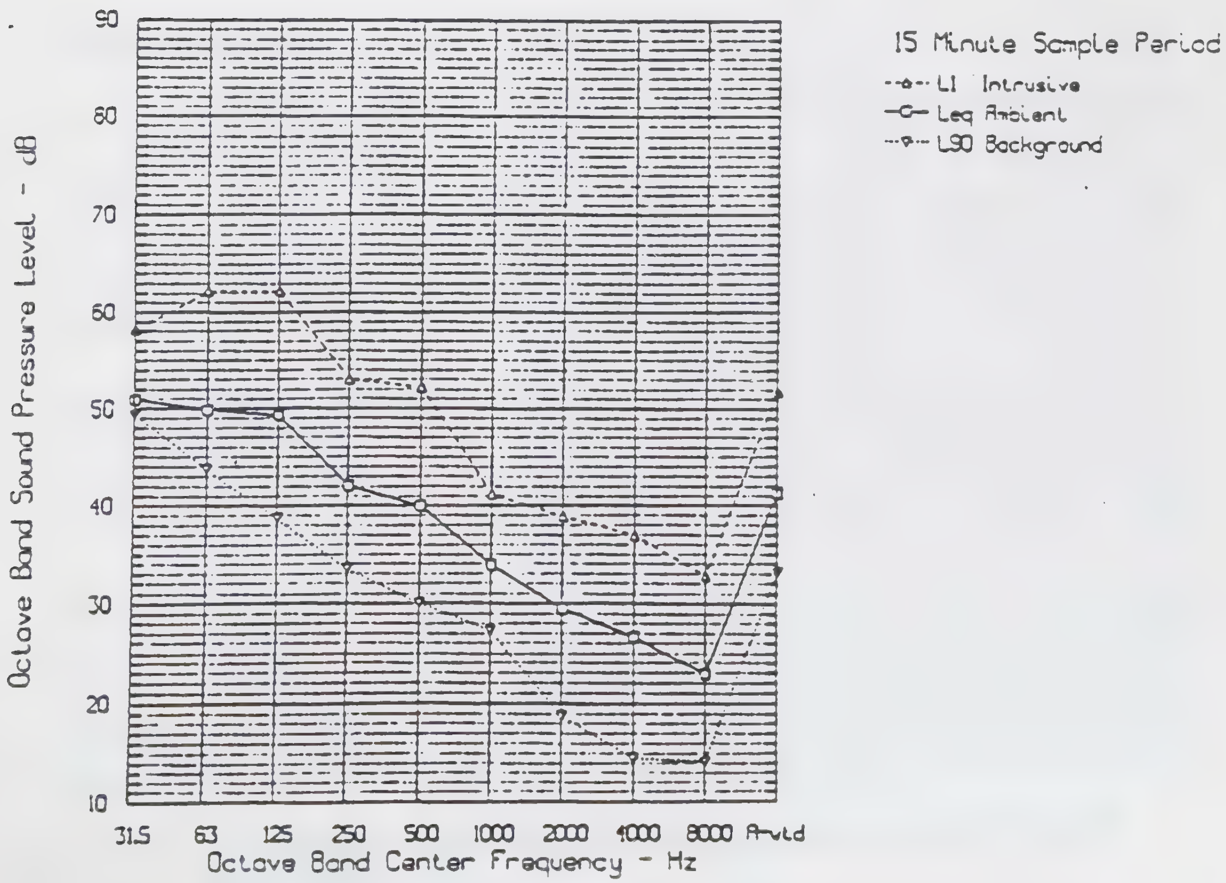
Santa Barbara Desalination Facility
Pump House at Reservoir No. 1
Edge of Reservoir with Sight Line to City
Feb 5, 1991 19:00-19:15
900 One Second Leq Samples



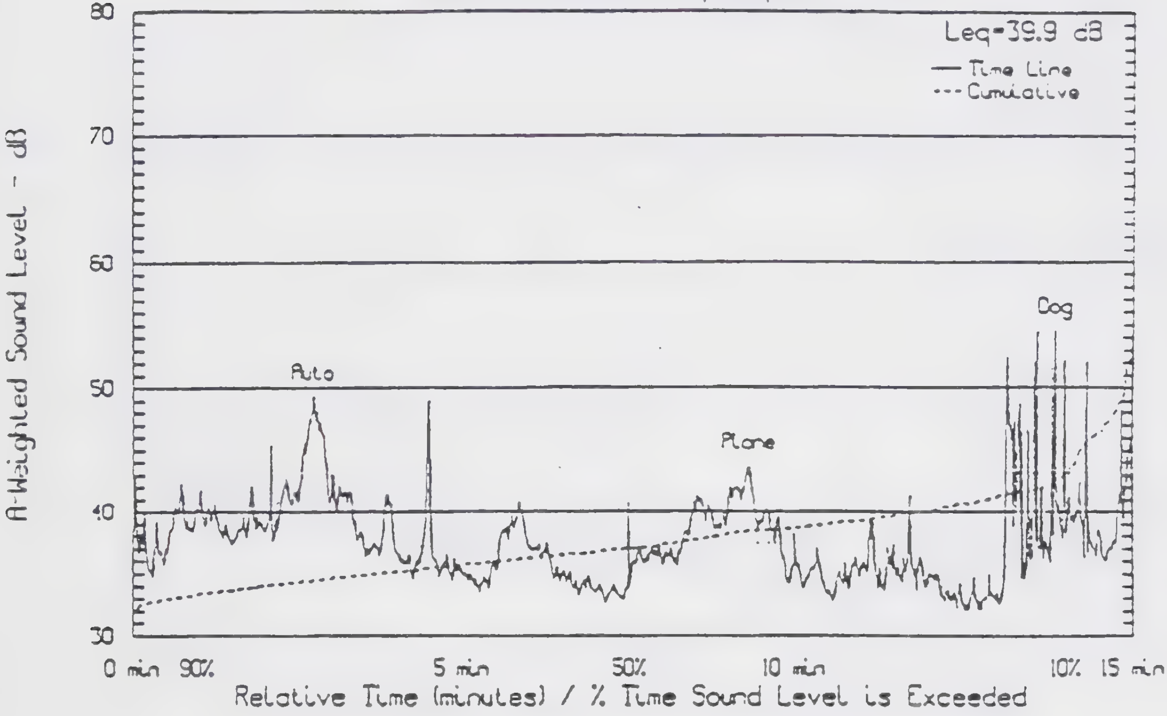


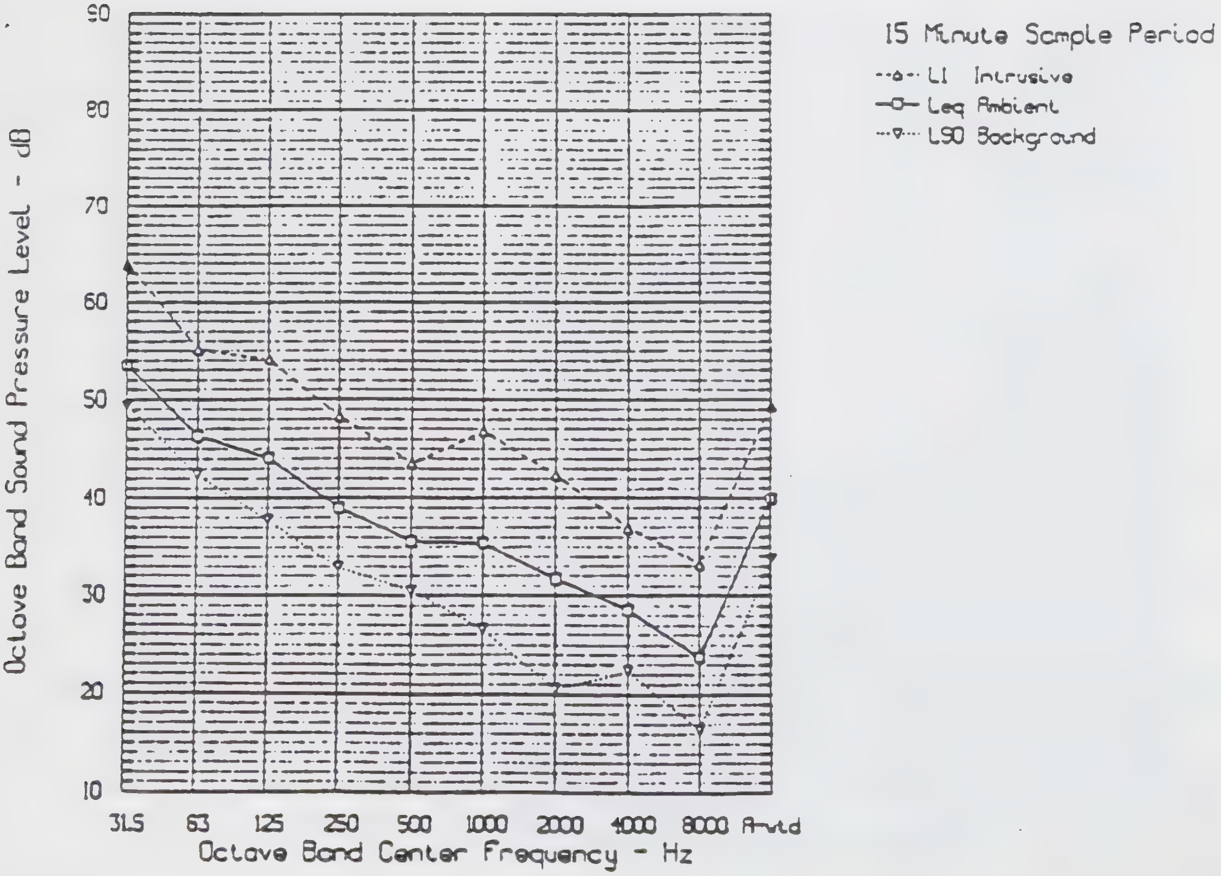
Santa Barbara Desalination Facility
Pump House at Reservoir No. 1
60 ft from Gate, 15 ft from Fence
Feb 5, 1991 19:36-19:51
900 One Second Leq Samples





Santa Barbara Desalination Facility
Pump House at Reservoir No. 1
60 ft from Gate, 15 ft from Fence
Feb 5, 1991 19:58-20:13
900 One Second Leq Samples





K-C GEOTECHNICAL ASSOCIATES A Californi[illegible]

Geotechnical Engineering Engineering Geology Envir[illegible]ental

File No. KC-1553-01
February ", 1991

Mr. Ron Sickafoose
Penfield & Smith Engineers, Inc.
111 East Victoria Street
Santa Barbara, California 93101

Subject: Sycamore Canyon Water Line Replacement
Sycamore Canyon Area
Santa Barbara, California
PRELIMINARY GEOLOGIC EVALUATION

Dear Mr. Sickafoose:

K-C Geotechnical Associates (K-C) is pleased to submit this letter report summarizing the general geologic conditions in the vicinity of the Sycamore Canyon Water Line Replacement Project, Santa Barbara, California. This letter completes our assignment in accordance with our work order of January 22, 1991, and authorized by Mr. Danny Wynn of Penfield & Smith (P&S) on January 22, 1991.

Purpose and Scope

The purpose of our preliminary geologic evaluation was to observe the general geologic conditions within the project area, and to review selected geologic reports for sites within the project area with respect to geologic constraints that could effect the planned water line alignment. We understand that a design-level geotechnical investigation may be performed once the alignment is selected and the geotechnical information needed for the project design is defined.

Our understanding of the proposed project is based on discussions with Mr. Ron Sickafoose of P&S, and review of selected topographic maps, parcel maps and an aerial photograph showing the proposed alignments. Information on the alternate alignment routes was provided by P&S based on meetings with the City of Santa Barbara engineers

Our scope of services was presented in our January 22, 1991 work order. The completed work summarized in this report is based on a geologic reconnaissance of the project area on January 29, 1991, review of selected geologic and geotechnical reports (listed on reference page), interpretation of selected stereo aerial photographs, and an evaluation of geologic data and field information.

Project Description

We understand that the City of Santa Barbara is planning to install a water line from a pump station to be constructed adjacent to an existing water reservoir (between Chase Drive and Cedar Lane) to the approximate intersection of Conejo Road (shown as Flores Road on the Geologic Map, Figure 1) and Stanwood Drive. The alignment of the water line has not been selected at this time. We understand that the alignment would extend from the reservoir and follow the alignment of an existing water main on Ranchito Vista Road (shown as Rancho Vista Road on Figure 1).

The topography of the project area consists of relatively moderate to steep (slopes ranging from approximately 60 to 30 percent grade), west facing slopes of Sycamore Canyon. With the exception of the steep ravine west of and below the reservoir, the proposed alignment will generally follow existing roadways (Sycamore Canyon Road and Ranchito Vista Road). Elevations within the ravine range from a high of approximately 350 feet near the reservoir to a low of approximately 125 feet at the base of the ravine adjacent to Sycamore Canyon Road. The approximate elevation at the northern end of the alignment, near the intersection of Conejo Road and Stanwood Drive is approximately 250 feet.

Geologic Conditions

The Sycamore Canyon area is situated within a series of elevated coastal terraces of the Santa Ynez Mountains. The Santa Ynez Mountain Range and adjacent lowlands is composed mostly of sedimentary rocks ranging in age from Cretaceous to Recent. Structural geology in Santa Barbara area consists of a south-dipping homocline and adjacent coastal plain cut by a series of subparallel faults and folds that are the result of north-south compressional tectonics. The predominant orientation of faults and folds is east-west extending from the mountains into the Santa Barbara Channel. The project vicinity is generally underlain by steep south dipping Tertiary-age shale (bedding inclinations of approximately 30 to 80 degrees). At some locations the normal south dipping sequence is interrupted by folding associated with north-south compressional stresses.

The geologic units exposed in the project vicinity consist of Rincon Formation, Monterey Formation, fanglomerate deposits, landslides and recent alluvium, The approximate location of these units is shown on the Geologic Map, Figure 1.

The Monterey Formation is exposed in roadcuts along Sycamore Canyon Road and Ranchito Vista Road, and in various outcrops along slopes adjacent to these roads. The

Monterey Formation is generally composed of white to tan clay shale and silty clay shale The Monterey Formation weathers to dark brown clay soils that are typically classified as expansive and creep-prone. The Monterey Formation is rated as having a high to moderate rating for landslide potential by the County of Santa Barbara Seismic Safety and Safety Element.

The Rincon Formation is exposed in roadcuts near the intersection of Ranchito Vista Road and Sycamore Canyon Road. The Rincon Formation is generally composed of olive green to brown, siltstone and shale with localized lenses of yellow-gray impure dolomite (Dibblee, 1966). The Rincon Formation weathers to dark brown clay soils that are typically classified as expansive and creep-prone. The Rincon Formation is rated as having a high to moderate rating for landslide potential by the Seismic Safety and Safety Element

The Tertiary age shale units in the area are overlain by fanglomerate deposits. The fanglomerate is generally composed of cobbles and boulders in a sandy clay matrix. Recent alluvium occupies the channel of Sycamore Creek, and is composed of cobbles, sand, silt and clay.

Landslide deposits have been mapped by others in various locations within the project area. The landslides occur within the Monterey Formation, Rincon Formation and fanglomerate deposits. The approximate locations of the mapped slides are shown on Figure 1.

Fault Setting

Faulting in the project area has occurred along several east-west trending zones and has resulted in uplift of some blocks and downdrop of others (Geotechnical Consultants, 1984). The faults mapped in the vicinity of the project are the Mission Ridge Fault System, the Eucalyptus Hill Fault, and the Montecito Fault. These faults are believed to be potentially active by several investigators (Hoover, 1984; Geotechnical Consultants, 1984; and Dibblee, 1966). Potentially active faults are defined as displacing deposits of late Pleistocene age (11,000 to 500,000 years), but not showing signs of Holocene age (0 to 11,000 years) displacement.

Landslides

A landslide mass was mapped by Hoover (1984) underlying the steep ravine west of the reservoir based on exploratory borings drilled approximately 200 feet west of the

reservoir. During our geologic reconnaissance, seepage within roadcuts in the ravine and phreatophytic (water-seeking) plants were observed within the ravine.

We observed relatively large slide deposits that are mapped by other investigators within the northern portion of the project area. A slide has been mapped in a east-west trending canyon south of the intersection of Ranchito Vista Road and Sycamore Canyon Road. The existing alignment of the water line on Ranchito Vista Road trends through this slide mass.

The Conejo Road Landslide has been previously mapped by Geotechnical Consultants, 1984 as a complex of active and inactive landslides. The eastern boundary of the slide mass has been mapped along the west bank of Sycamore Creek in the vicinity of the intersection of Conejo Road and Stanwood Drive (Leighton, 1984).

Discussion

Our preliminary evaluation of the geologic conditions within the project area indicates that there exists potential geologic hazards that could impact the alignment, design and construction of the water line. These are: landslide movement, soil creep, and ground shaking by earthquakes from nearby or regional faults.

In our opinion the water line alignment should be selected to avoid as much of the mapped slide masses as possible. In areas where the water line crosses slides, consideration should be given to installing flexible couplings or welded cast-iron pipe in these areas. Horizontal movement of the slide masses could be monitored by installing slope inclinometers.

As discussed previously, the soils derived from the weathering of the Rincon and Monterey Formations are typically classified as being creep-prone. The depth of creep-prone soils within the chosen alignment should be evaluated during the design-level geotechnical investigation.

The site is located in a seismically active area typical of southern California. Ground shaking in response to local and/or regional earthquakes should be anticipated at the site in the future. The Mission Ridge, Eucalyptus Hill and Montecito Faults have been mapped trending east-west through the project area. These faults are considered to be potentially active (Hoover, 1978). The potential for ground movement on these faults is not known. Design considerations for flexible couplings at fault locations should be considered.

K-C Geotechnical Associates (K-C) prepared the conclusions and professional opinions presented herein in accordance with generally accepted geotechnical engineering principles and practices at the location and time the report was prepared. This statement is in lieu of all warranties, express or implied.

Please contact the undersigned if there are any questions concerning the information in this letter.

Very truly yours,
K-C Geotechnical Associates
a California Corporation

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No. 621
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GEOTECHNICAL
STATE OF CALIFORNIA

Roger Slayman
Staff Geologist

Ross A. Morrison
Principal Engineer, GE 621

Copies: 4 - Addressee

RS:kd(102001)

DRAFT

PHASE 1 CULTURAL RESOURCES SURVEY
PROPOSED PUMP STATION AND WATER MAIN REPLACEMENT PROJECT
SANTA BARBARA, CALIFORNIA

February 8, 1991

Prepared for

Public Works Department
City of Santa Barbara

Prepared by

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Environmental Programs Division
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Contents

Figures

1.0 INTRODUCTION

This report summarizes the results of a Phase 1 cultural resource survey at the proposed location of a electric pump station and along the right-of-way for a proposed water main replacement project in Santa Barbara, California (Figures 1 and 2). The pump station would be located next to City Reservoir No. 1 at the end of Cedar Lane. The water main would be replaced for 5,000 feet near Sycamore Canyon Road and Stanwood Drive. The proposed actions are aspects of the City of Santa Barbara's and Ionics Inc.'s proposed construction of a temporary desalination facility (Woodward-Clyde 1990).

Since the preferred route for the water main and the location of the pump station had not been determined until February 1991, cultural resource investigations for the pump station and water main were not included in the cultural resource study for the desalination facility (Imwalle 1990) or in the Draft EIR (Woodward-Clyde 1990).

Background archaeological research and field survey by SAIC and historical investigations by PHR Environmental Consultants have revealed that there are no definite cultural resources in the project area, although there is the potential for prehistoric resources to be discovered during construction. Because substantial portions of the surveyed area were obscured by fill or vegetation, because some areas lie within a sensitive zone as identified by the City's Master Environmental Assessment (MEA), because shell was recorded in a previous survey along Sycamore Canyon Road, and because archaeological site SBa-99 may lie west of the survey area, it is recommended that all ground-disturbing construction activities in the project area from the pump station and access road to the intersection of Conejo Road and Stanwood Drive shall be monitored by a professional archaeologist.

Figure 1

LOCATION OF PROPOSED PUMP STATION AND
WATER MAIN REPLACEMENT PROJECT

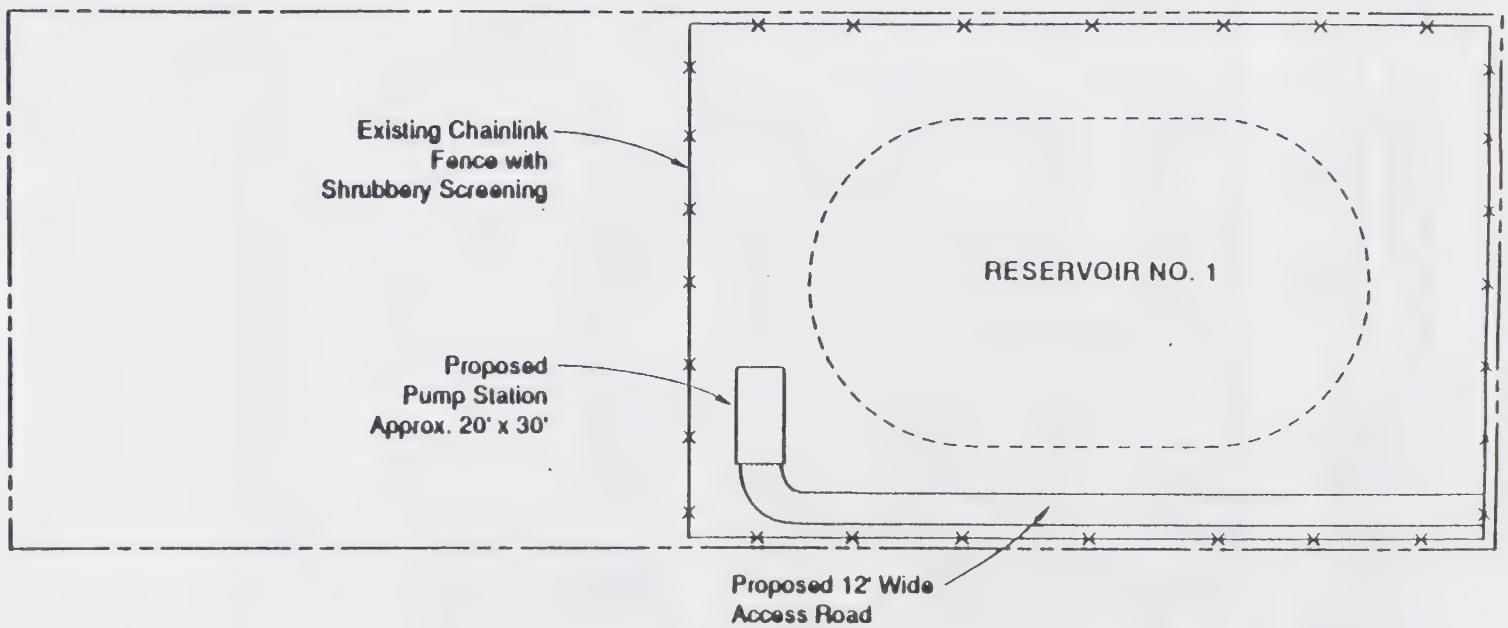

Figure 2

PROPOSED PUMP STATION AT CITY RESERVOIR NO. 1

2.0 PROJECT DESCRIPTION

The City of Santa Barbara and Ionics, Inc. have proposed to build a temporary emergency reverse osmosis desalination project in Santa Barbara. The basic objective of the project is to provide emergency water supplies of up to 10,000 acre feet per year (AFY) to be on-line by early 1992 and available for up to 5 years. The proposed desalination facility would be located next to Highway 101 on East Yanonali Street.

The proposed desalination project would require the City to upgrade a portion of its existing water distribution system to meet the increased demands of water transport from City Reservoir No. 1 to Sheffield Reservoir. The existing system is unable to handle the pumping requirements and throughput of a desalination facility that produces more than 8,000 AFY.

The system upgrade would require that a section of existing 12-inch line be replaced and that a new electric pump station be installed at City Reservoir No. 1. The proposed electric pump station would have dimensions of 20 feet by 30 feet, would have a capacity of about 4,000 gallons per minute, and would require a 12-foot wide access road to the new station within the existing fenced boundary of City Reservoir No. 1. The access road would run along the southern portion of the reservoir facility boundary (Figure 2). The new 16-inch pipeline would be approximately 5,000 linear feet, starting at City Reservoir No. 1 at the end of Cedar Lane. From there it would go upslope though residential areas and would intersect Canon View Road. From there the pipeline would turn and meet Ranchito Vista Road, then Sycamore Canyon Road. From the intersection of Sycamore Canyon Road and Stanwood Drive, the 12-inch pipeline would follow Stanwood Drive for a short distance to the intersection with Conejo Road (Figure 1). At that point it would be enlarged to a 14-inch diameter line. No pipelines would be replaced between Conejo Road and Sheffield Reservoir (Figure 1).

Pipeline construction will require the excavation of trenches that are estimated to be 3 to 4 feet wide and 4 to 8 feet deep (R. Sickafoose, personal communication 1990). This would be of sufficient width and depth to impact cultural remains should they exist beneath the surface.

3.0 RECOMMENDATIONS

3.1 PREHISTORIC RESOURCES

Although no prehistoric remains were found during the field investigations, the site records search and Phase 1 archaeological survey of the project area indicate that the project has the potential to affect prehistoric resources at several locations.

All project areas are subject to the following recommended condition:

> In the event that prehistoric or historic remains are encountered during construction, all work in the area of the discovery shall halt and a qualified archaeologist shall be consulted to assess the nature and significance of the resource. If the resource is considered significant, further construction at that location shall not occur until a Phase 3 mitigation study has been designed and implemented.

Substantial portions of the surveyed area were obscured by fill or vegetation, some areas lie within a sensitive zone as identified by the City's MEA, shell was recorded in a previous survey along Sycamore Canyon Road, and archaeological site SBa-99 may lie west of the survey area. Therefore, the following recommendation is also made:

> All ground disturbing construction activities in the project area from the pump station and access road to the intersection of Conejo Road and Stanwood Drive shall be monitored by a professional archaeologist.

3.2 HISTORIC RESOURCES

Based on the historical research and findings described in section 4.2, the proposed pipeline project and pump station do not appear to threaten any significant historic resources. The majority of the pipeline route will disturb only the existing conduit easement area. The project historians studied historic maps and aerial photographs to determine whether these easements traverse any historic pathways or areas where historic structures may have stood or activities occurred. It appears from the evidence that the existing roadways containing these easements represent the first historic land uses. There is no existing conduit easement from the end of Canon View south to City Reservoir. The historic research also showed no evidence of any past use of the area between these two locations.

The proposed corridor does approach two significant or potentially significant historic features: Jack's Fountain and City Reservoir No. 1. It is recommended that particular care be taken to avoid damage to these resources during construction of the pump station and access road and during the pipeline replacement.

4.0 RESULTS

4.1 PREHISTORIC RESOURCES

The Cultural Resources Sensitivity Map of the City's Master Environmental Assessment (MEA) shows that a portion of the project area within Sycamore Canyon is considered sensitive for prehistoric and Native American resources.

A site records and literature search was conducted at the Central Coast Information Center, University of California, Santa Barbara to determine whether the project area had been previously surveyed for cultural resources and contained any previously recorded archaeological sites. Recorded sites and surveyed areas were then mapped on the USGS 7.5' Santa Barbara quadrangle topographic sheet.

Shortly after the Sycamore Canyon fire in 1977, a survey was made by Caltrans of selected culvert locations along Sycamore Canyon Road and Stanwood Drive (Meacham 1977). Portions of the area surveyed by Caltrans are within the current project location. At culvert No. 10, just south of the intersection of Sycamore Canyon Road and Stanwood Drive, shell fragments were found between the road and the creek south of the pipe. These fragments were not recorded by Caltrans as a site or as an isolated find at that time, because the project was an emergency.

Also near the project area is archaeological site SBa-99, located on the hill side east of Sycamore Canyon Road. Very little information is available about this site. Although they did not actually visit the site, Wilcoxon and Hannahs (1990) wrote of SBa-99 that it was located along the eastern terrace of Sycamore Canyon. It was initially recorded by David Banks Rogers of the Santa Barbara Museum of Natural History in the 1920s. Rogers described the site as a "small, highly developed former camp of the Hunting People (1929:82)" next to a powerful spring located within the former holdings of Mr. Joseph Flores. Rogers also reported that there were a series of caves showing evidence of Indian habitation along the cliff overlooking the site. Wilcoxon and Hannahs (1990) found no evidence that Rogers had ever actually performed excavations at SBa-99 or that there had been more recent investigations there.

The original ground surface of most of the surveyed areas was obscured by fill and vegetation. Some of the proposed pipeline would be located beneath City streets that could not be effectively surveyed for cultural resources, although an effort was made to inspect all exposed areas. In a few locations the ground surface had been graded down to bedrock. The results of the site record search and the Phase 1 survey are summarized below.

The areas of the proposed pump station and access road next to City Reservoir No. 1 were completely covered in iceplant and impossible to survey for cultural resources. However, the presence of a large berm next to the reservoir suggested that the surface surrounding the reservoir was probably graded.

Along the pipeline right-of-way east of Sycamore Canyon Road there were areas where visibility was clear enough to identify cultural resources if any were present. None were found. Near the southern end of Ranchito Vista between Ranchito Vista and Sycamore Canyon Road is the presumed location of SBa-99. No artifacts or other cultural remains of any sort were found, so presumably the right-of-way avoids this site. Also, some of the right-of-way in this area has been previously excavated all the way to bedrock, so if cultural remains existed there in the past, they would have been destroyed. However, most of the right-of-way in this area had not been dug down to bedrock; in fact, in several locations fill obscured the surface, so the possibility remains that parts of SBa-99 extend into the project area.

Where the right-of-way joins Sycamore Canyon Road, pavement, fill, and gravel obscured the natural ground surface. A previous survey by Meacham (1977) produced shell in this area, but none was found during the current survey. It is possible that intact archaeological deposits exist beneath the road and fill.

4.2 HISTORIC RESOURCES

By local and federal criteria, historic resources are standing structures or artifacts that, generally, are at least 50 years old and that bear historic or architectural significance because of their unique or uniquely representative relationship to important people, events, or styles. Such resources can contribute to an enhanced understanding of historical eras or events.

An initial field survey revealed that the proposed route and the pump station will apparently disturb no standing structure or inhabited land. The ensuing historic resource survey, therefore, sought to identify any areas along the proposed conduit route where historic activities may have occurred or where historic structures may have once stood. Sources consulted included historic maps, aerial and other photographs, building permits, newspaper clippings, and secondary historical data. Field researchers found these materials in the following repositories:

- City of Santa Barbara, Public Works Department
- City of Santa Barbara, Community Development Department
- University of California, Santa Barbara, Maps and Imagery Library and Department of Special Collections
- Santa Barbara Public Library
- Santa Barbara Historical Society, Gledhill Library

4.2.1 History of the Subject Area

The study route follows the line of Sycamore Canyon from its northern point, climbs along a steep grade up the east side of the canyon, and terminates at the existing City reservoir. For the most part, it proposes to use existing easements along the following streets or roads: Stanwood Drive, Sycamore Canyon Road, Ranchito Vista Road, and Canon View Road. The earliest map consulted that covered this study area was an 1852 United States Coast Survey map of the Port of Santa Barbara. It clearly shows Los Alisos (Sycamore Canyon) and marks the topographic features to the east. The map, however, indicates no trail, road, or structure along the study route. The nearest thoroughfare is an unimproved road to the east of the study area, essentially following the line of the future Eucalyptus Hill/Alameda Padre Serra roadways.

In 1870, a United States Coast Survey map of the Town of Santa Barbara and vicinity shows the first structure near, not in, the study area. This L-shaped structure was located near Sycamore Creek, near what would be today's intersection of Montecito and Cañada. An 1878 survey, "Showing Alterations and Improvements Since the Survey of 1870," shows that Cañada had been cut through to a point near the west side of the creek, and that an unimproved road followed up the creek's west side for a short distance. Still no markings appeared north or east of this area in the subject vicinity.

Sometime between 1878 and 1889, a road approximating the route of the current Sycamore Canyon Road extended from Yanonali Street along the east side of the creek. An 1889 Sanborn map of the City of Santa Barbara indicated this thoroughfare, but did not show the northern terminus of the street.

A USGS topographic map of 1901 provides the first indication of activity within the study area (Figure 3). The city reservoir, which is to be one terminus of the proposed pipeline, appears in place atop Eucalyptus Hill. According to historical accounts, this reservoir originated in 1897 after the City completed construction of a water tunnel, described as a "horizontal well," from Cold Spring Creek. The tunnel was successful and the City required water storage capability to hold the excess (Eckman 1967:7). A 1924 Public Works map refers to this first reservoir as the Eucalyptus Hill reservoir.

Since no trails appear to the north of the reservoir in the 1901 map, it seems that construction access to the reservoir came from the unimproved road to the south and east. If that is the case, the new pipeline will not disturb the route used during construction or historic maintenance of the reservoir. From the available data, the route of the original water tunnel from Cold Spring Canyon to the reservoir could not be traced, although later maps imply that the water entered the reservoir from the southeastern side of the reservoir (see Public Works map 26).

Sycamore Canyon Road and Stanwood Drive (originally called Parma Ranch Road) appear completely in the 1901 USGS map, although no structures appear on either side. Jack's Fountain, a notable feature of the Stanwood Drive/Sycamore Canyon Road area, indicates that the dirt roadways were popular equestrian trails in the early 20th century. The monument, now designated as historical, was built in 1926 by Marguerite Doe Ravenscroft in memory of her horse, Jack. The monument was designed as a fountain for the benefit of equestrians riding along the route from Santa Barbara. Designed by Lutah Maria Riggs, California's first woman architect, the monument sits to the northeast of the proposed conduit line.

A 1928 real estate map shows ownership along these two roadways in the study route, but did not specify any structures (Figure 4). The Flores tract, a triangular property north and spanning the intersection of Stanwood Drive and Sycamore Canyon Road, is identified in this map. In published recollections, Cecelia Stevenson, granddaughter of Joe Flores, owner of the tract, stated that "cattle roamed the hilly land of Sycamore Canyon," and that her grandfather also raised corn and wheat on the fields there (Powell 1990). A 1928 aerial photograph confirms that, except for two small, rectangular buildings located in the Flores tract, there were virtually no structures in the study area. These were on the east side of Stanwood Drive. Building permits indicate that a new dwelling on the Flores tract, at 1808 Stanwood Drive, was built in 1932. A sketch of the site submitted to the City in 1957 shows that the dwelling was located about 100 feet east of the water conduit contained within the Stanwood Drive right-of-way.

A brief survey of building permits for other addresses along Sycamore Canyon Road and Stanwood Drive indicated sporadic construction along the west side of the creek occurred during the 1940s and early 1950s. The 1977 Sycamore Canyon fire, of course, caused tremendous destruction to these properties (Dalton 1987).

It is unclear exactly when Canon View Road was cut through from the east fork of Sycamore Canyon Road south toward the reservoir. Maps of the area dated 1942 and 1947 do not show the route, but it does appear on USGS topographic map dated 1952 (Figure 5). No markings indicating structures appear on the map, and the road is unimproved for the greater part of its distance. An aerial photograph, also dated 1952, clearly depicts the Canon View roadway. Several residential structures appear considerably to the east of Canon View in this photograph. The earliest building permit found with a Canon View address was dated 1961.

Ranchito Vista Road apparently was built between 1952 and 1955. It did not appear in the topographic map or in the aerial photograph mentioned above, but it did appear in a 1955 City Water Department map, showing the route of a proposed 12-inch water main. It is unclear whether any structures existed along the road way at the time. The earliest building permit found for a Ranchito Vista address was dated 1960.

Figure 3

USGS TOPOGRAPHIC MAP, 1901

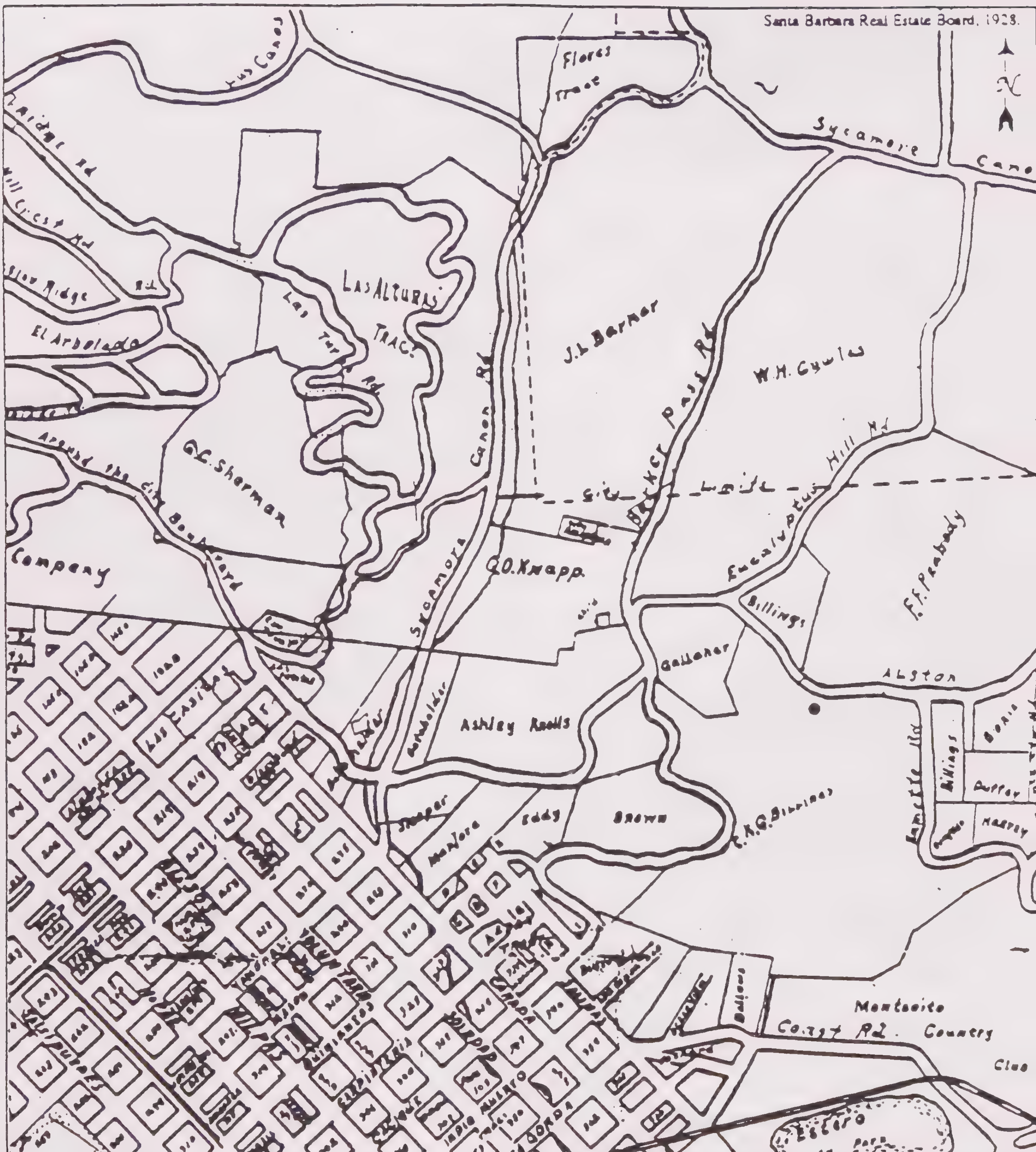

Figure 4

REAL ESTATE MAP OF THE CITY OF SANTA BARBARA, 1928

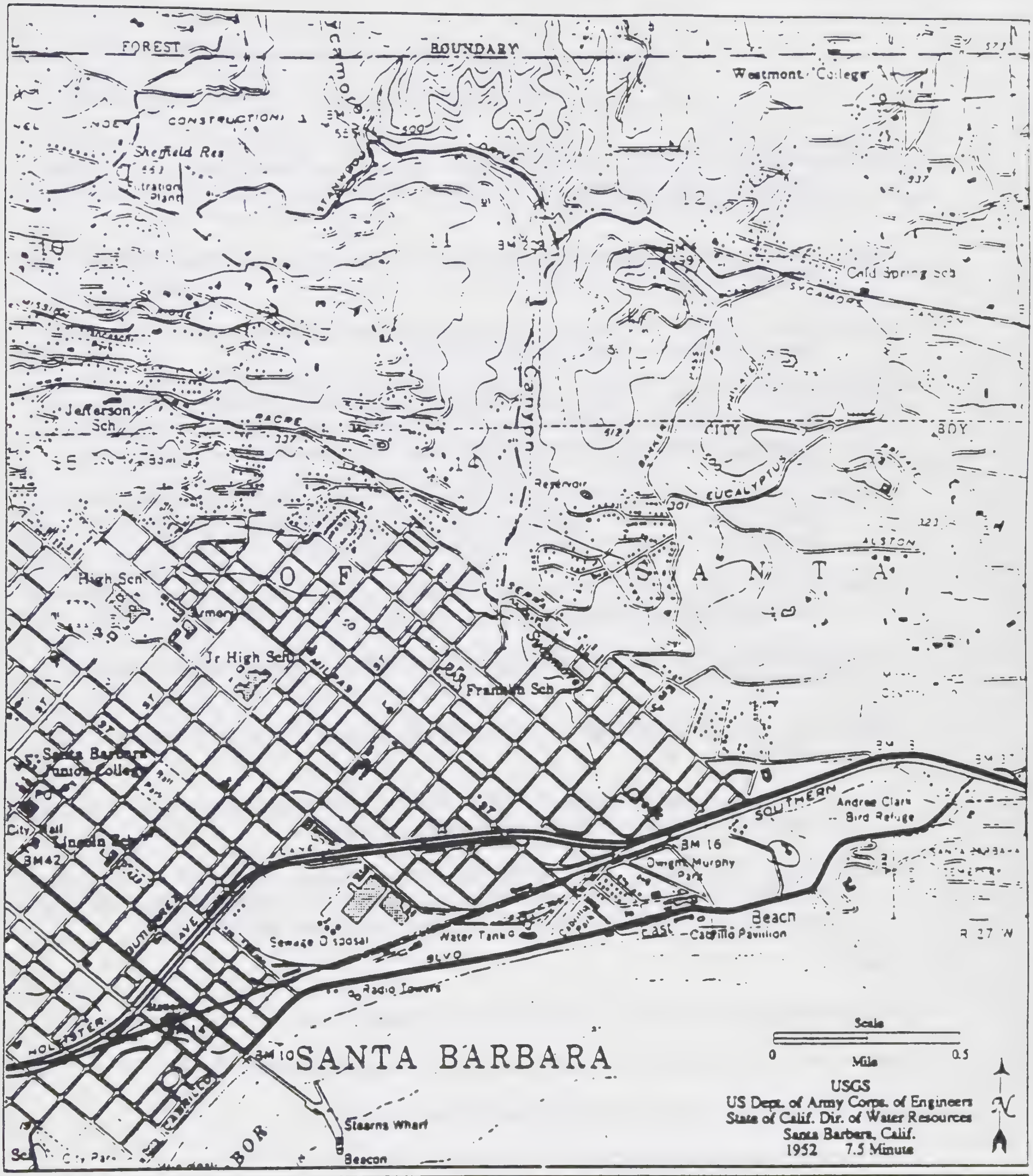

Figure 5

USGS TOPOGRAPHIC MAP, 1952

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APPENDIX A

LETTER FROM CENTRAL COAST INFORMATION CENTER

California Archaeological Inventory
Information Center
SAN LUIS OBISPO AND SANTA BARBARA COUNTIES

Department of Anthropology
University of California, Santa Barbara
Santa Barbara, CA 93106
(805) 893-2474

4 February 1991

To Whom It May Concern:

This letter is to certify that an archaeological records search was conducted in this office on 4 February, 1991 by Teresa Rudolph of SAIC. This records search was for the Water Main Replacement project, within the Santa Barbara quadrangle of Santa Barbara County.

Sincerely,

Dennis Ogburn
Assistant Coordinator

APPENDIX B

ARCHAEOLOGICAL SITE SURVEY RECORD, SBA-99

Not for Public Distribution

University of California, Department of Anthropology

ARCHAEOLOGICAL SITE SURVEY RECORD ~~Not Located--LWS, 1968~~

1. Site SBA 99 2. Map ~~SBA~~ Santa Barbara 3. County Santa Barbara

4. Twp. 4N Range 27W SE 1/4 of SE 1/4 of Sec. 11

5. Location UTM 254280 E / 3813650 N

6. On contour elevation 250'

7. Previous designations for site Flores, SBMNH 99

8. Owner 9. Address

10. Previous owners, dates

11. Present tenant

12. Attitude toward excavation

13. Description of site Hunting people

14. Area 15. Depth 16. Height

17. Vegetation 18. Nearest water

19. Soil of site 20. Surrounding soil type

21. Previous excavation

22. Cultivation 23. Erosion

24. Buildings, roads, etc.

25. Possibility of destruction

26. House pits

27. Other features

28. Burials

29. Artifacts

30. Remarks

31. Published references Rogers (1929), p. 82, site F

32. UCMA Accession No. 33. Sketch map

34. Date 1929 35. Recorded by D. B. Rogers 36. Photos

APPENDIX B

PHASE I CULTURAL RESOURCE EVALUATION

This appendix contains the Phase I Cultural Resource Evaluation performed for the proposed project.

A PHASE 1 CULTURAL RESOURCE EVALUATION
FOR A PROPOSED DESALINATION PLANT AND FACILITIES
CITY OF SANTA BARBARA EMERGENCY WATER SUPPLY PROJECT
SANTA BARBARA, CALIFORNIA

SUBMITTED TO

Woodward-Clyde Consultants
5951 Encina Road
Santa Barbara, California 93117

SUBMITTED BY

Michael H. Imwalle
Archaeological Consultant
7249 Tuolumne Drive
Goleta, California 93117

December 3, 1990

TABLE OF CONTENTS

INTRODUCTION

This report summarizes the results of archival and field research for a Phase 1 Cultural Resource Evaluation for the City of Santa Barbara's Emergency Water Supply Project. The scope of work as set forth in the cultural resource section of the City of Santa Barbara's Master Environmental Assessment included a) a cultural resource records search archaeological and historic documents pertaining to the project area, b) an intensive archaeological field survey to locate potentially significant cultural resources, and c) an assessment of construction impacts and appropriate management recommendations.

PROJECT DESCRIPTION

The proposed project (Figure 1) will entail construction of a desalination plant located north of the existing El Estero Waste Water Treatment Plant (WWTP). Using a reverse osmosis process, seawater will be desalted and distributed via existing user supply lines. The desalination project is designed to augment the limited supply of fresh water available to the City of Santa Barbara and the surrounding areas.

Major onshore components of the project include a desalting plant site, pump station and chemical treatment area, electrical substation, and onshore pipelines.

Figure 1: Project Location Map

Offshore components of the project include an offshore seawater intake, a subsea intake pipeline, and a subsea brine discharge line (Figure 2).

The proposed desalination plant will be located on a 1.5 acre lot north of Yanonali Street and immediately south of U.S. Highway 101. Intake and brine discharge pipelines will run south from the desalination plant site, under Yanonali Street to the existing WWTP. The pipeline corridor runs west to the northwest corner of the WWTP, south along the east side of the Laguna Channel, east across the WWTP, and southeast to the pump station and chemical treatment area. The intake line runs south from the pump station to the existing weir box at East Beach, and from the weir box 2500 feet south to the seawater intake. A brine discharge line will run west from the Pump station and connect to the existing 48 inch outfall line.

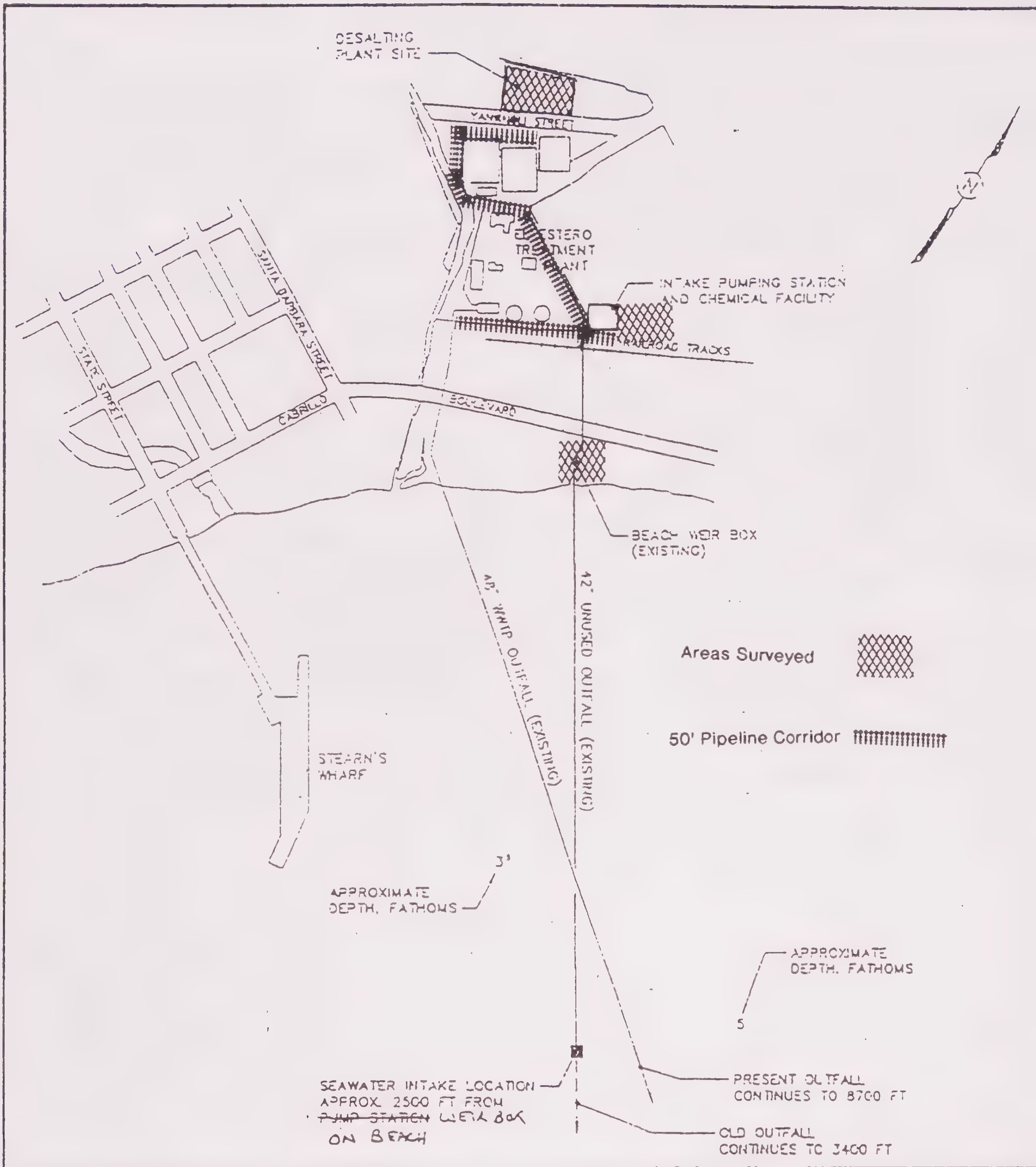


Figure 2: Project Design Plan

BACKGROUND RESEARCH

In order to locate and determine the nature of previously recorded cultural resources within the project area, existing archival information was researched. Archaeological site records, field notes, historic maps, current city, county, state, and federal cultural resource listings, aerial photographs, and published and unpublished literature were examined. During the research phase for this project the following sources were consulted:

- City of Santa Barbara Public Works Department
- Mission Santa Barbara Archives
- Santa Barbara Historical Society, Gledhill Library
- University of California, Santa Barbara, Map and Imagery Department
- University of California, Santa Barbara, Special Collections Department
- University of California, Santa Barbara, Central Coast Information Center, California Archaeological Site Survey

FIELD RESEARCH

Survey Techniques

After completing the background research, an intensive archaeological field survey was conducted at the proposed desalination plant site, electrical substation, pump station and chemical treatment area, seawater intake pipeline insertion area (East Beach), and 50 foot wide onshore

pipeline corridors (Figure 2). The purpose of the survey was to locate any potentially significant cultural resources that may be impacted during the construction phase of this project. Facility sites and pipeline corridors within the El Estero Waste Water Treatment plant were surveyed systematically by inspecting the ground surface along parallel transects spaced at intervals of approximately 5 meters. Due to the urban nature of the project area and the presence of man-made features, i.e. paved surfaces, sidewalks, structures etc., any bare ground surface adjacent to the survey area was also inspected. When survey area was covered with dense vegetation, a shovel was used to clear the ground surface for inspection. The field survey was carried out by Michael H. Imwalle between November 19, 1990 and the date of this report.

Criteria for determining presence or absence of prehistoric cultural resources included presence of shellfish or other faunal remains, artifacts or cultural features, flaking debris from chipped stone tool manufacture, and soil discoloration associated with human occupation. Criteria for determining the presence or absence of historic period cultural resources included the presence of stone or adobe features associated with structures, diagnostic ceramics, glass, and iron from the Spanish, Mexican, or early American periods, and the presence of faunal remains introduced during the historic period, i.e. cow, pig, etc.

Survey Accuracy

The accuracy of any archaeological survey relies heavily upon landform disturbance and ground surface visibility in the area being investigated. Because most most proposed construction activities will occur in areas that have been covered by historic landfill the possibility of encountering surface evidence of any potentially significant cultural resources is considered remote. The location of any potentially significant cultural materials found during the survey phase of this study was plotted on project base maps.

BACKGROUND RESEARCH AND FIELD INVENTORY

In accordance with requirements set forth in the Cultural Resource section of the City of Santa Barbara's Master Environmental Assessment, a records search was performed at the Central Coast Information Center of the Archaeological Site Survey, UCSB (Appendix 2). The records search revealed that no previously recorded archaeological sites are known within a 0.6 mile radius of the project area. The closest recorded prehistoric archaeological sites are SBa-27 and SBa-28 located approximately 0.6 kilometers and 0.7 kilometers southwest of the project area respectively.

Several archaeological surveys have been conducted in the vicinity of the project area. An examination of the proposed Plaza Park Development (Fuller 1979), an evaluation

of a downtown street widening project (Wilcoxon 1988), a survey of 101 East Cabrillo Boulevard (Snethkamp and Gerber 1988a), an survey of Mason Street between Anacapa and Chapala Streets (Snethkamp and McDowell 1990), a survey of a proposed Yanonali Street extension (Cooley and Toren 1990), a survey of water reclamation use areas (Wilcoxon, Haley, and Harmon 1989), and a survey of 201 Santa Barbara Street (Wilcoxon 1988) are the closest surveys to the current project areas. Additionally a survey of two small areas within the existing WWTP was conducted by Wilcoxon in 1988. These investigations did not identify any historic or prehistoric archaeological resources near the project area.

A construction excavation monitoring program at 301 east Gutierrez and 404 and 406 Garden Street identified historic bricks approximately 0.3 kilometers west of the project area (Snethkamp and Billman 1990). An archaeological backhoe testing program at the proposed Fiesta Park Project (immediately south of S.P.R.R. tracks along the southern border of existing WWTP) identified remnants of the "Shore Acres" resort area and a portion of the "El Estero Racetrack" (Wilcoxon 1987).

In order to reconstruct historic land use patterns within the project area, historic maps, city directories, and a diachronic series of aerial photographs dating from 1928 to the present were examined (Appendix 1).

Historic maps indicate that the current project area was located within seasonably or permanently inundated

marshland until the estero basin was developed as an agricultural park and racetrack in the summer of 1886 by the Santa Barbara Land and Improvement Company (Rouse 1981).

Sanborn Fire Insurance Maps indicate that the facility was no longer present in 1907, however remnants of the track are visible in aerial photographs as late as 1947. Sanborn Map Coverage of the area indicates the current project area as undeveloped from 1907 until 1950. The sewage treatment plant first appears in the southern portion of the project area 1954.

A projection of the street grid over the undeveloped area (1876 Wright and Freeman Property Ownership Map) indicates the 400 and 500 blocks of Mason Street and Yanonali Streets would fall within the current project area. City directory listing do not show any occupants or addresses in this area until the Santa Barbara Sewage Treatment Plant was listed at 402 East Mason Street in 1955.

The cultural resource inventory compiled during the background record search of the Phase 1 Cultural Resource Evaluation includes the El Estero Racetrack (Figure 3), and the El Estero Racetrack Grandstand (Figure 4). Both sites were indicated on Sanborn Fire Insurance Maps in 1886 and 1892 within the limits of the Agricultural Park (Figure 5).

No previously recorded prehistoric sites were located within the immediate environs of the project area. No significant historic or prehistoric cultural resources were identified during the field reconnaissance.

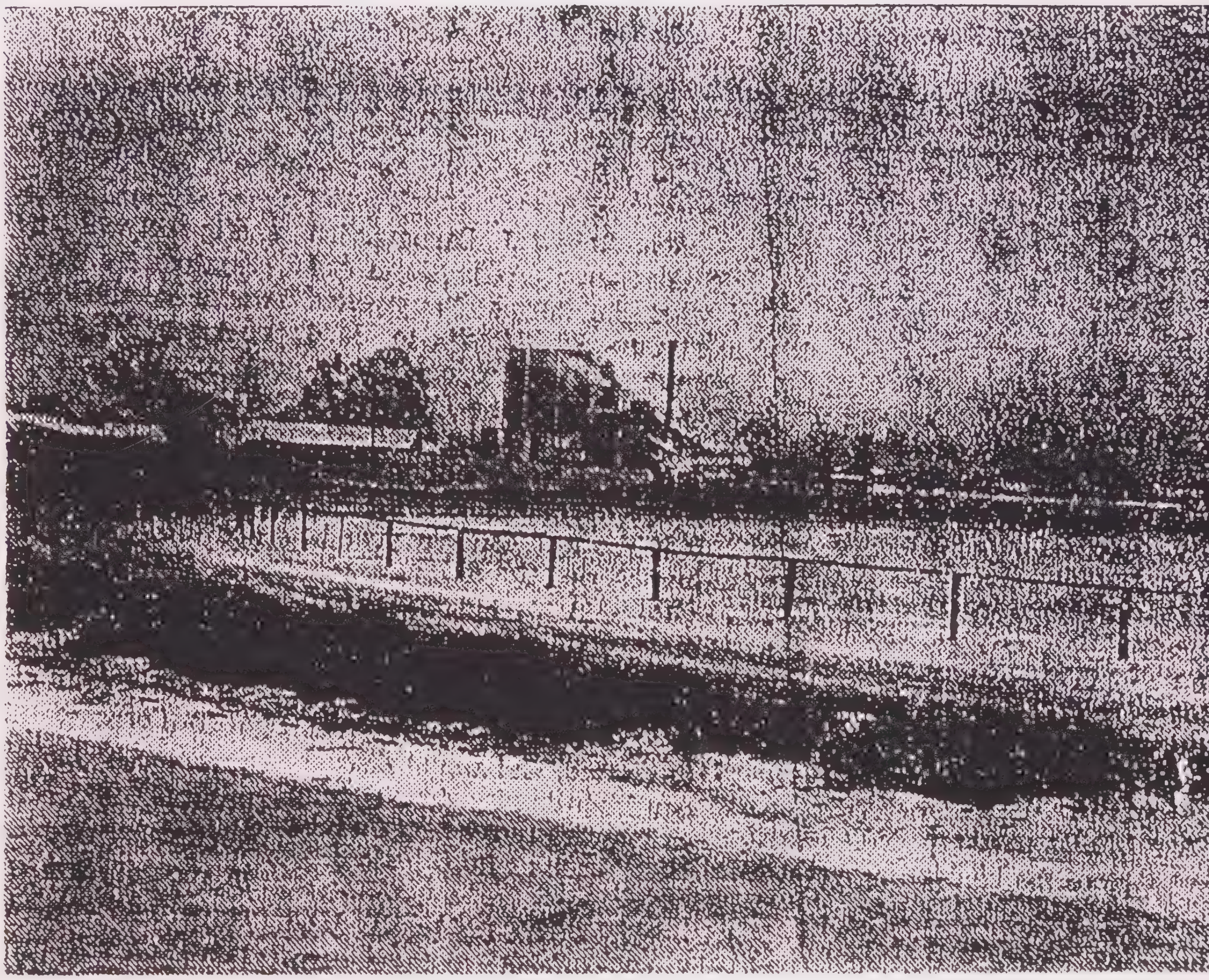
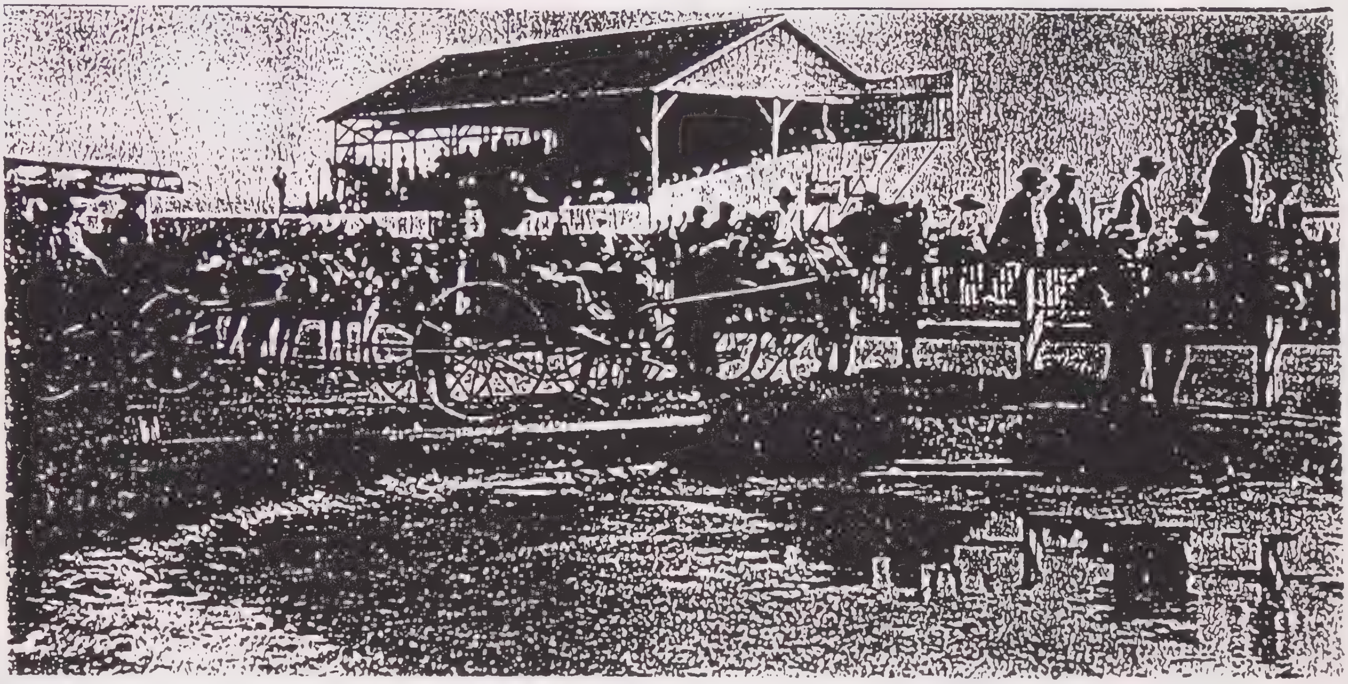


Figure 3: El Estero Racetrack

SOURCE: Walker Tompkins, "El Estero Racetrack," S.B. News-Press 3/11/73



1881 Photograph

Figure 4: Racetrack Grandstand

SOURCE: Walker Tompkins' Santa Barbara Neighborhoods, 1989.

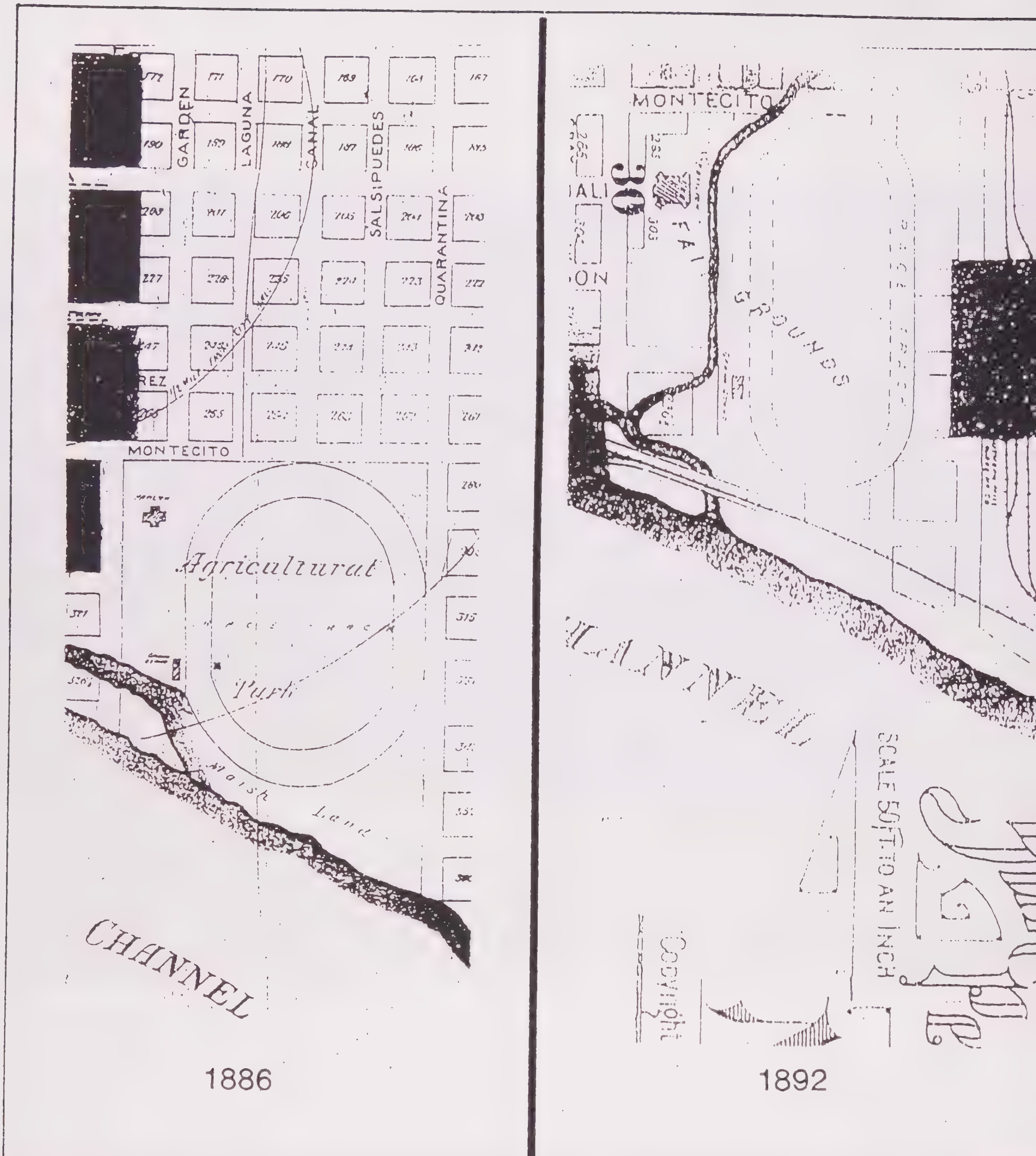


Figure 5: Sanborn Fire Insurance Maps

CULTURAL RESOURCE SIGNIFICANCE

Significance Evaluation Criteria

The California Environmental Control Act of 1970 (CEQA) established policies for basic environmental protection. Section 21001 of CEQA provides that the state "*take all action necessary to provide the people of this state with clean air and water, enjoyment of natural, scenic, and historic environmental qualities...and preserve for future generations representations of all plant and animal communities and examples of major periods of California history.*" Cultural resources dating from the historic and prehistoric periods are among those which must be assessed for potential impacts.

Section 21083.2 of CEQA requires a lead agency to make a determination of whether a project will have a significant effect on archaeological resources and whether such resources are "unique." Section 21083.2 describes a unique archaeological resource as:

"*an archaeological artifact, object, or site about which it can be clearly demonstrated that, without adding to the current body of knowledge, there is a high probability that it meets any of the following requirements:*

1) *contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;*

2) *has a special and particular quality such as oldest of its type or best example of its type;*

3) *is directly associated with a scientifically recognized important prehistoric or historic event or person.*" (PRC 21083.2)

Appendix K of the CEQA guidelines provides that an "important archaeological resource" is one which:

a) *is associated with an event of person of recognized significance in California or American history or of recognized scientific importance in prehistory;*

b) *can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions;*

c) *has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;*

d) *is at least 100 years old and possesses substantial stratigraphic integrity; or*

e) *involves important research questions that historical research has shown can be answered only with archaeological methods.*

Criteria for eligibility for the National Resister as set forth in the National Historic Preservation Act of 1966 (NHPA) specify that:

"the quality of significance in American history, is present in districts, sites, buildings, structures, and objects of state and local importance that area at least 50 years old, possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

a) *that are associated with events that have made a significant contribution to the broad patterns of our history; or*

b) *that are associated with the lives of persons significant in our past; or*

c) *that embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, of that represent a significant and distinguishable entity whose components may lack individual distinction; or*

d) *that have yielded or be likely to yield information important in history or prehistory"*(36 CFR Section 60.6).

The City of Santa Barbara has adopted Ordinance 3900 creating a permanent Landmarks Committee and establishing criteria for the designation of City Landmarks and Structures of Merit. City Code Section 22.22.040 specifies that in considering a proposal for designation as a landmark, the Landmarks Committee shall apply any or all of the following criteria:

a) *"its character, interest, or value as a significant part of the heritage of the City, the State, or the Nation;*

b) *its location as the site of a significant historic event;*

c) *its identification with a person or persons who significantly contributed to the culture and development of the City, State, or Nation;*

d) *its exemplification of a particular architectural style or way of life important to the City, the State, or the Nation;*

e) *its exemplification of a particular architectural type in a neighborhood;*

f) *its identification as the creation, design, or work of a person or persons whose effort has significantly influenced the heritage of the City, the State, or the Nation;*

g) *its embodiment of elements demonstrating outstanding attention to architectural design, detail, materials, or craftsmanship;*

h) *its relationship to any other landmark if its preservation is essential to the integrity of that landmark;*

i) *its unique location or singular physical characteristic representing an established and familiar visual feature of a neighborhood;*

j) *its potential to yield significant information of archaeological interest; or*

k) *its integrity as a natural environment that strongly contributes to the well-being of the people of the City, the State, or the Nation."*

Significance Evaluation

The Estero Racetrack was an important element of recreational land use and development in the Santa Barbara Waterfront area between 1886 and 1903. No physical remnants of the racetrack or grandstand that meet the criteria for significance as set forth of the California Environmental Control Act (CEQA) or the National Historic Preservation Act (NHPA).

Because the existing landform in the project area consists of imported fill, it is possible that previously undetected remains of the racetrack or grandstand may be encountered during project construction. Any evidence of cultural remains possessing stratigraphic and spatial integrity may possess significant interpretive value over and above that which can be obtained from archival records and maps. Because of this potential, monitoring of sensitive areas has been recommended.

CULTURAL RESOURCE IMPACTS

Onshore Components

Desalination Plant Site. Grading will consist of removing and recompacting surface soil (approximately 2000-4000 cubic yards) to an average depth of 1-2 feet for site preparation.

Soils investigations revealed estuary deposits buried beneath 3-6 feet of compacted fill.

Given the fact that any potentially significant cultural resources within this portion of the project area are buried beneath 3-6 feet of fill, direct or indirect adverse impacts as a result of construction activity are considered minimal.

Electrical Substation. Construction of a 60 foot by 35 foot electrical substation at the southern end of the Yanonali Street crossing will result in moderate surface disturbance. The substation will be located immediately north of the existing WWTP.

No potentially significant cultural resources were located during the background research or field reconnaissance in this portion of the project area. Historic documentation indicates this area fell within the infield of the El Estero Racetrack.

Pump Station and Chemical Treatment Area. Construction of the pump station will result in the excavation of approximately 2000 cubic yards of soil during the grading and subgrade operations. The total area for the station will be approximately 25 feet by 100 feet. Surface soil in the pump station area will be recompacted. Excavation of four pump tubes (6 feet in diameter and 35 feet deep) will also occur within this area. Chemical treatment facility

construction will consist of excavation and recompaction of surface soil.

No potentially significant cultural resources were located during the background research or field reconnaissance in this portion of the project area. Historic documentation indicates this area fell within the infield of the El Estero Racetrack.

Onshore Pipelines. Construction within the onshore pipeline corridors will consist of excavation and installation of saltwater intake and brine discharge lines to and from the desalination facility.

No potentially significant cultural resources were identified during the field survey of the 50 foot wide onshore pipeline corridors. Historic background research indicates that the brine discharge pipeline may cut through the surface of the former El Estero Racetrack near the Southwest corner of the existing WWTP facility (Figure 6). A plot of the location of the old racetrack and grandstand indicate that the proposed point of intersection between the brine discharge line and the existing 48 inch sewage outfall line falls in the general vicinity of the grandstand.

There is potential for direct impacts to remains of the racetrack course and grandstand during onshore pipeline installation in the vicinity of the southwest corner of the existing WWTP.

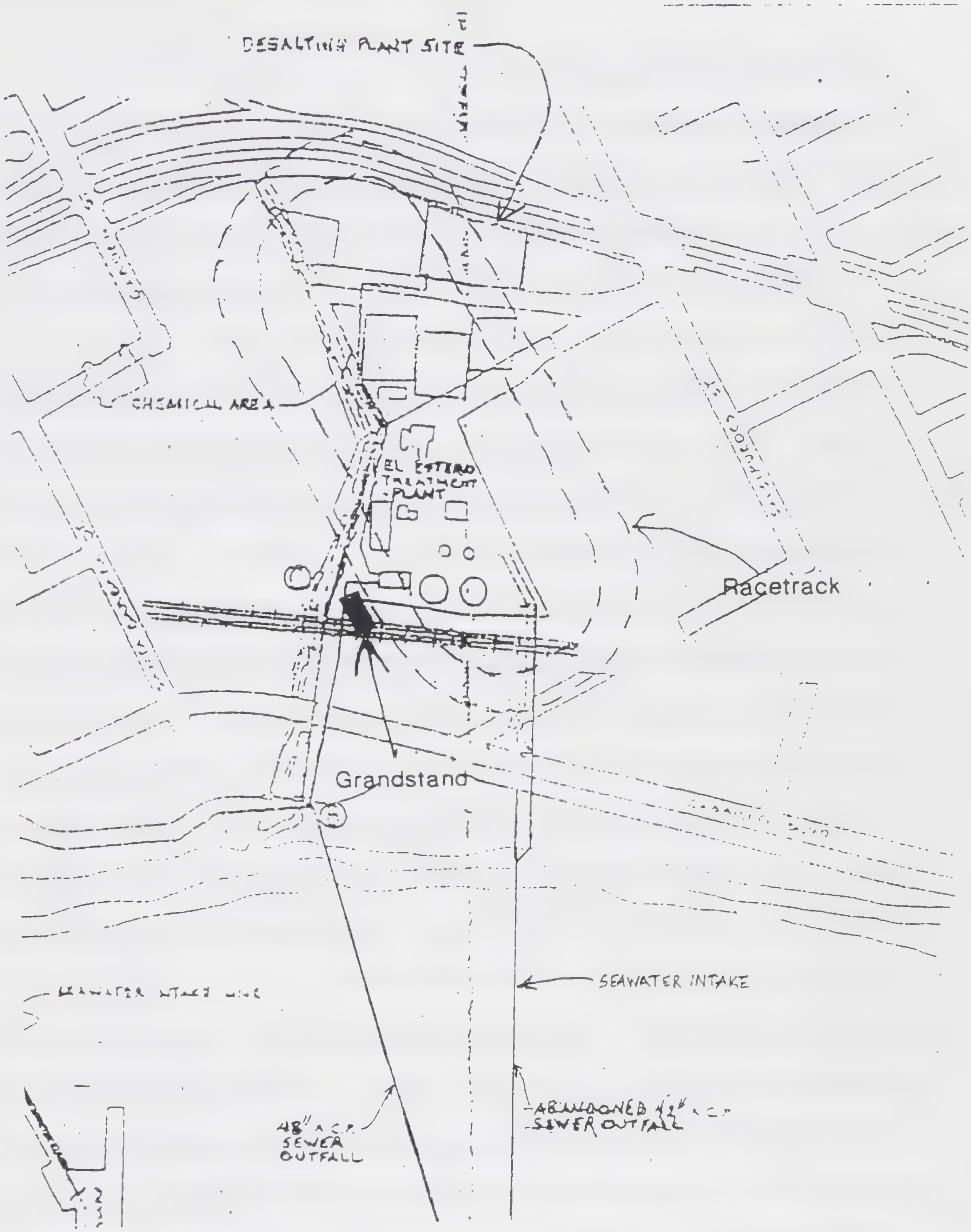


Figure 6: Racetrack Overlay

SOURCE: 1892 Sanborn Fire Insurance Map

Offshore Components

Seawater Intake. Construction activities during installation of the seawater intake will consist of breaking open the abandoned outfall line, and connecting it to the two intake structures 2500 feet south of the weir box near Cabrillo Boulevard. The intake structures will be set on concrete bases (22 feet in diameter) and secured to the ocean floor with pilings. With the exception of the pilings only moderate surface disturbance will occur during the intake structure installation.

Subsea Intake Pipeline. The 36 inch intake pipeline will be sleeved into the 42 inch abandoned outfall line from a point near the existing onshore weir box south of Cabrillo Boulevard. The pipe is buried beneath sand from the weir box to a point 1800 feet south. Installation of the 36 inch line may require breaking the 42 inch abandoned line open at various locations in order to clear it of accumulated debris. In order to access the pipeline, excavation of sand from the surface of the pipe will be necessary.

No potentially significant cultural resources were located in the offshore portion of the project area during the background research. Since the deposition of sand covering the pipeline postdates its installation the potential for adverse impacts to previously unidentified cultural resources during the removal of the sand is considered minimal.

Brine Discharge Pipeline. The brine discharge pipeline will feed into the existing 48 inch sewage outfall line onshore. There is no offshore construction component for the brine discharge pipeline.

MANAGEMENT RECOMMENDATIONS

Onshore Components

Since the entire onshore portion of the project area is covered by 3-6 feet of fill, the possibility exists that buried cultural resources not discovered during the field reconnaissance may be encountered during construction activities. Given this potential all contractors and construction personnel be alerted to the sensitivity of this area. If cultural features should be exposed or suspected, work should be promptly halted and a professional archaeologist consulted.

Desalination Plant Site (10,000 AFY). Background research indicates the eastern portion of the el estero racetrack formerly ran through the proposed desalination plant site. Intact, identifiable remnants of the track potentially exist below surface fill (Wilcoxon 1987). For any excavation to a depth greater that 2 feet below surface, an archaeological monitor should be retained to identify any track remnants or associated deposits. The archaeological monitor should reserve the right to halt or redirect grading/excavation for

a period that would enable accurate recording of locational information.

Electrical Substation. No mitigation measures are recommended.

Pump Station and Chemical Treatment Area (10,000 AFY). No mitigation measures are recommended.

Onshore Pipelines. Background research indicates the western portion of the el estero racetrack formerly ran across the proposed brine discharge line corridor. Intact, identifiable remnants of the track potentially exist below surface fill (Wilcoxon 1987:7). A plot of the location of the old racetrack and grandstand indicate that the proposed point of intersection between the brine discharge line and the existing 48 inch sewage outfall line falls in the general vicinity of the grandstand.

An archaeological monitor should be retained during the excavation of the brine discharge line from a point 300 feet east of the of intersection of the existing 48 inch sewage outfall line. The archaeological monitor should reserve the right to halt or redirect grading and or excavation for a period that would enable accurate recording of locational information.

<u>Offshore Components</u>

The offshore portion of the project area was not included in the initial field survey. The possibility exists that buried, previously unrecorded cultural resources may be encountered during construction activities. Given this potential all contractors and construction personnel for the offshore construction components should be alerted to the sensitivity of this area. If cultural features should be exposed or suspected, work should be promptly halted and a professional archaeologist consulted.

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APPENDIX 1: MAP AND AERIAL PHOTOGRAPH INTERPRETATIONS

MAPS

1820 *Map of Santa Barbara Presidio, Santa Barbara, California.* Drawn by Edward Vischer

- A road running towards San Buenaventura (Camino de la Playa) runs just south of the project area. A small adobe is indicated on the east bank of the laguna channel north of the existing El Estero Waste Water Treatment Plant.

1852 *Map of the Port of Santa Barbara, California.* U.S. Coast Survey.

- The project area is depicted as undeveloped marshland. Two roads run east/west in the general vicinity of the project area. No structures are indicated near the project area.

1853 *Map of the City of Santa Barbara, California.* Drawn by Vitus Wackenreuder. (Wackenreuder No. 1)

- The project area is depicted as "El Estero." No structures are present in the immediate vicinity of the study area.

1853 *Preliminary Sketch of Santa Barbara, California.* U.S. Coast Survey. Drawn by James Alden.

- The project area is depicted as undeveloped marshland. Several roads intersect in an area southeast of the project area to form a road that runs towards Ventura.

1870 *Map of the Town of Santa Barbara and Vicinity, Register No. 1229.* U.S. Coast Survey.

- Area to the west of the west of the project area is under cultivation. Project area is depicted as undeveloped marshland.

1876 *City of Santa barbara, California.* Published by Wright and Freeman.

- The entire project area is depicted as undeveloped land south of the city. Blocks 301, 302, 318, 319, 335, and 336 which incorporate the existing WWTP location are owned by J.E. Gaux.

1877 *Bird's Eye View of Santa Barbara, California.* Drawn and published by E.S. Clover.

- The entire project area is depicted as undeveloped land south of the city.

1870-1878 *Sketch of the City of Santa Barbara, California.* Showing part of the Survey of 1870 and changes and improvements to date, January 1878. U.S. Coast Survey. M. Section X. 43a.

- The entire project area is depicted as undeveloped land south of the city.

1886 *Santa Barbara, California.* Sanborn Map & Publishing Company, Ltd., New York.

- The project lot lies outside the area of map coverage. Map index depicts project area within the agricultural park and racetrack. A grandstand is shown near the southwest corner of the existing WWTP.

1889 *Map of the City of Santa Barbara, California.* Compiled by Charles Mensch. C.G. Sanborn.

- The blocks containing the project area do not indicate ownership. Blocks 283 and 284 to the north of Yanonali are depicted as owned by C.E. Huse.

1892 *Santa Barbara, Santa Barbara County, California.* Sanborn-Perris Map Company, Ltd., New York.

- The map index shows that the racetrack has been truncated on the easter side as a result of the westward encroachment of the street grid.

1898 *Santa Barbara, California, El Pueblo de las Rosas.*

- The project area is depicted within the agricultural park. The grandstand and pavilion are clearly visible.

1907 *Insurance Maps of Santa Barbara, California.* Including Miramar and Summerland. Sanborn Map Company, New York.

- The map index depicts the project area as undeveloped land. The racetrack is no longer occupying the project area.

1930 *Insurance Maps of Santa Barbara, California.*

Including Miramar and Summerland. Sanborn Map Company, New York. (1930 edition corrected through 1947.)

- Project area appears undeveloped.

1930
1950 *Insurance Maps of Santa Barbara, California.* Including Miramar and Summerland. Sanborn Map Company, New York. (1930 edition corrected through 1950.)

- Project area appears undeveloped.

AERIAL PHOTOGRAPHS

1928 C-311 C Section, Frame A-15

- Remnants of the El Estero Racetrack are visible surrounding the project area. Some type of debris, possibly representing the ruins of the grandstand, can be seen near the south west portion of the track. Remnants of a larger track can be seen extending to the north and to the west on the opposite side of the Laguna Channel. The channel appears in its current configuration.

1929 C-430, Frame A-15

- There is no change from the previous photo.

1938 C-4950, Frame SF-99

- There are no major changes from the previous photograph. The view of the southeastern portion of the track is obscured, possibly from the addition of fill.

1943 BTM-1944 #7, Frame 4B-128

- Area in location of the existing S.B. Rescue Mission seems to be occupied by a construction yard. A large structure has been built over the southeastern portion of the racetrack (1 Salsipuedes?). The northwestern setcion of the racetrack is still visible.

1947 GS-EM. Frame No. 6-159

- There is no change in the vicinity of the project area. Modern US Highway 101 can be seen immediately north of the project area.

1954 BTM-1954 Frame 7K-70

- The sewage treatment plant can be seen in its current configuration. There is still no development in the area of the WWTP or proposed desalination plant.

1961 BTM-1961 #7. Frame 7BB-61

- There is no change from previous photo.

1967 BTM-1967 Frame IHH-38

- There is no change from previous photo.

1972 PW-SBI, Frame 77

- There is no change from previous photo.

APPENDIX 2: PROOF OF RECORDS SEARCH

California
Archaeological
Inventory
Information
Center
SAN LUIS OBISPO AND
SANTA BARBARA COUNTIES

Department of Anthropology 25
University of California, Santa Barbar
Santa Barbara, CA 93106
(805) 893-2474

15 November 1990

To Whom It May Concern:

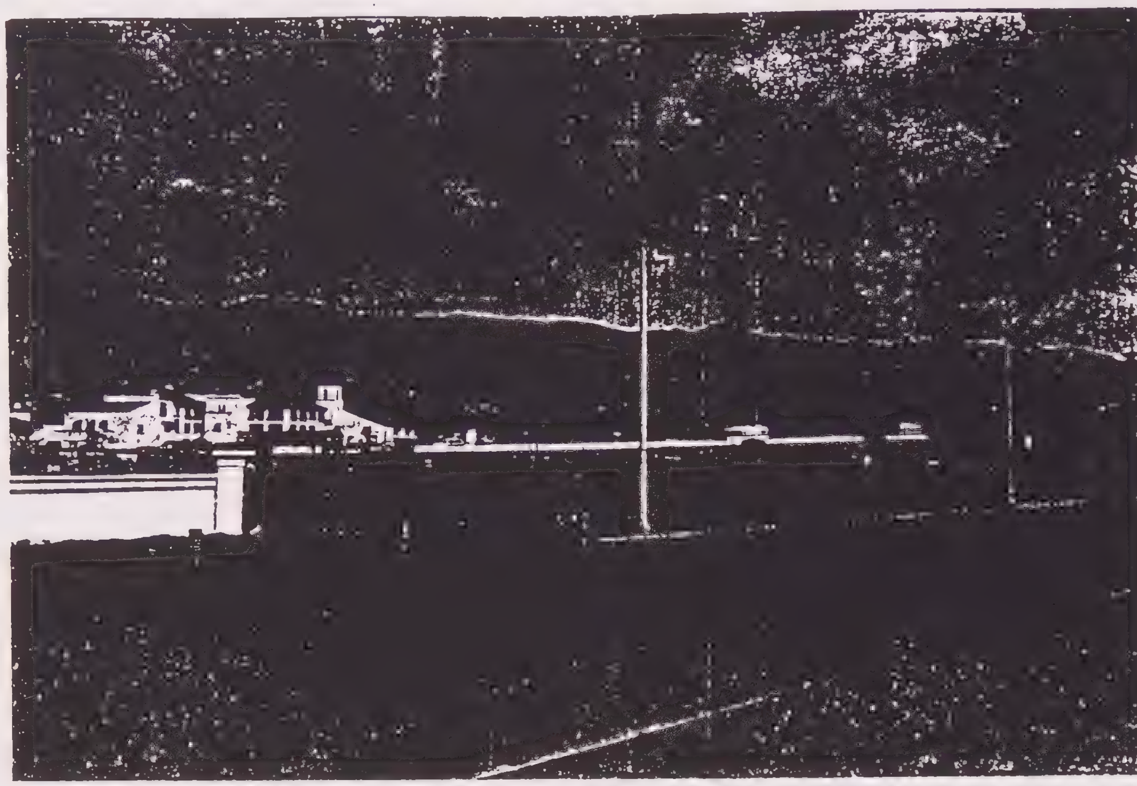
This letter is to certify that an archaeological records search was conducted in this office on 15 November, 1990 by Mike Imwalle. This records search was for the Phase I Cultural Resource Evaluation: City of Santa Barbara Emergency Water Supply project within the Santa Barbara quadrangle of Santa Barbara County.

Sincerely,

Ann Munns

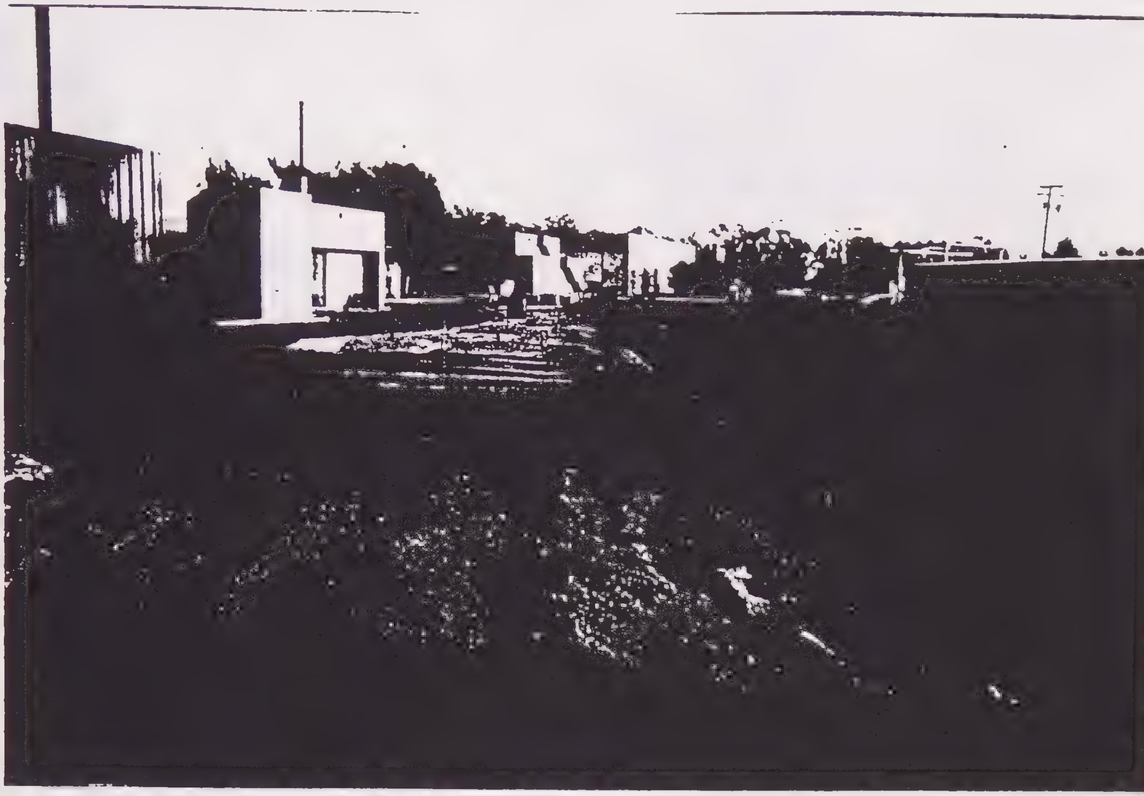
Ann Munns
Assistant Coordinator

APPENDIX 3: PHOTOGRAPHS OF SURVEY AREA



Proposed Desalination Plant Site (facing northeast)

Proposed pipeline corridor north of existing WWTP (facing northeast)



Proposed pipeline corridor running SE from NW corner of existing WWTP

Proposed pipeline corridor between existing WWTP (right) and administration building (left)

Proposed pipeline corridor between WWTP admin. building and existing pump station (facing SE

Existing pump station and chemical treatment area (facing north)

Proposed brine discharge pipeline corridor at south edge of WWTP (facing NE)

Approximate route of existing 48" sewage outfall line (from SW corner of WWTP)

APPENDIX C

INITIAL STUDY,
NOP MAILING LIST,
AND TRAFFIC SUPPLEMENT

Appendix C includes the following:

- Initial Study and Notice of Preparation (NOP)
- NOP Mailing Lists
- Traffic Supplement

CITY OF SANTA BARBARA

COMMUNITY DEVELOPMENT DEPT.

Planning Division 564-5470
Housing & Redevelopment Division 564-5461
Division of Land Use Controls 564-5485
Director's Office 564-5455
Fax Number 564-5477

630 GARDEN STREE
POST OFFICE BOX 199
SANTA BARBARA, CA 93102-199

NOTICE OF PREPARATION

Notice is hereby given that the City of Santa Barbara has completed an Initial Study of the City of Santa Barbara and Ionics, Incorporated Proposed Desalination Project in the City of Santa Barbara. The Initial Study was performed in accordance with the Guidelines for implementing the California Environmental Quality Act (CEQA). The Initial Study was undertaken for the purpose of assessing whether the project may have a significant effect on the environment. On the basis of such Initial Study, the City Staff and the Environmental Review Committee have determined that a focused Environmental Impact Report (EIR) will be prepared for the proposed project.

The City of Santa Barbara will be the Lead Agency for CEQA compliance and preparation of the EIR. The City hereby solicits the views of your agency as to the scope and context of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. It is assumed that your agency will use the EIR prepared by the City when considering your permit or other approval for the project.

The project description, location, and potential environmental effects are included in the attached Initial Study.

Your comments should focus on identifying significant environmental issues, reasonable alternatives and mitigation measures which should be addressed in the EIR.

Due to time limits mandated by State law, your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

Please send your response to Mr. Mitch Oshinsky, Principal Planner, at the address shown above. Please provide the name of a contact person in your agency relative to this project.

Dated: August 27, 1990

Signature: Mitch H. Oshinsky

Title: Principal Planner

Telephone: (805) 564-5470

CITY OF SANTA BARBARA

Emergency Water Supply
Ionics Desalination Project Initial Study

SB-106-90

August 24, 1990

Prepared by

WOODWARD-CLYDE CONSULTANTS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Background

The City of Santa Barbara is experiencing a drought-induced water shortage. In response, the City is considering the development of a temporary emergency project to augment its water supply by up to 10,000 acre-feet per year (AFY) for up to five years.

To date, the City's review process for a temporary alternative water supply has included:

1.) Over 600 hours of evaluation by the City Alternative Water Supply Panel of more than 26 proposals.

2.) Over 20 hours of public hearings by the Panel.

3.) Preparation of a Preliminary Environmental Assessment to evaluate the final three tankering and three desalination proposals.

4.) An Early Public Consultation Scoping Hearing by the City Environmental Review Committee (ERC) (an optional provision of CEQA).

5.) Over eight hours of public hearings by the City Council, culminating in the selection of the Ionics desalination project as the preferred alternative, August 14, 1990.

This Initial Study (IS) represents the first stage of formal environmental review of the selected alternative as required by the California Environmental Quality Act (CEQA) of 1970, as amended.

Overview

The purpose of a CEQA Initial Study is to provide a preliminary analysis of the environmental impacts of a project to determine whether a Negative Declaration (ND) or an Environmental

Impact Report (EIR) should be prepared; and, if an EIR is prepared, to focus on the issues to be covered in the document.

The ERC will consider this Initial Study at a public hearing scheduled for August 24, 1990. The ERC will make a determination as to the appropriate environmental document to be prepared for the project. The ERC does not approve or deny the project.

This project is a proposed desalination facility to provide a temporary emergency water supply to the City of Santa Barbara. The facility consists of a reverse osmosis desalination plant, supporting chemical area, and alternative offshore seawater intake locations, a connection into the City's wastewater treatment plant outfall for brine disposal, and associated pipeline routes.

Staff recommends preparation of an EIR. Potential significant effects associated with the proposed project have been identified pertaining to geology and soils, water quality, plant and animal life, noise, risk of upset, human health, visual, recreation, and cultural resources.

Questions as to mandatory findings of significant environmental effects including the potential to degrade the quality of the environment, and substantial health and safety environmental effects on human beings have been raised.

This project will require a discussion and evaluation of a range of alternatives which could feasibly attain the basic objectives of the project (to provide temporary emergency supplies of up to 10,000 AFY of water to be on-line by early 1992), to include, but not to be limited to: other desalination proposals at the project site; other desalination sites and seawater intake locations; tanker transport of fresh water from outside the area; increased conservation; increased use of reclaimed water; groundwater, including deep bedrock wells; and State water via Lake Casitas.

The EIR process will involve a 30 or 45 day review period for review and comment by the public and Federal, State, and local Responsible Agencies, and the certification of the EIR by the ERC. Following the certification, the project will be scheduled for review of a Coastal Development Permit by the Planning Commission. The Planning Commission will consider the information in the EIR, staff reports and public testimony in order to evaluate the project for consistency with the Santa Barbara Local Coastal Plan (LCP).

The desalination project will also require permits and approvals from Federal and State agencies. Regulatory agencies with potential jurisdiction and permit requirements include the following:

Federal

- U.S. Army Corps of Engineers
    - Section 10 Permit
    - Section 404 Permit
    - Letter of Permission (possibly)
    - NEPA Compliance
    - Consultation with other federal agencies

State

- California Coastal Commission
    - Coastal Development Permit
    - Consistency Determination
- State Lands Commission
    - Industrial Lease/ROW (possibly required)
- California Department of Fish and Game
    - Stream Alteration Agreement
    - Blasting Permit

- State Water Resources Control Board, Regional Water Quality Control Board
    - National Pollutant Discharge Elimination System (NPDES) Permit (or modification of existing permit)
- California Department of Health Services, Office of Drinking Water
    - Amended Domestic Water Permit

PROJECT DESCRIPTION

Introduction

Ionics, Incorporated proposes to construct and operate a desalination facility in the City of Santa Barbara to produce drinking water from seawater. The purpose of this project is to provide a temporary emergency alternative water supply to be on line by early 1992 and available to replace a portion of normal City water supplies. Normal City supplies have been lost due to a four year drought which has produced a projected water deficit of 33 percent for water year 1990-91. This project would produce up to 10,000 acre feet per year (AFY) of water for up to five years.

Background on Drought Condition

Along with the entire Central California coastal region, the City of Santa Barbara is experiencing severe drought conditions. If rainfall in the next two winters (90-91 and 91-92) is average or less than average, the City could lose its primary water supply from Lake Cachuma by the beginning of the 92-93 water year in May of 1992. The City relies heavily on Gibraltar and Cachuma Reservoirs for approximately 75 percent to 85 percent of normal water production, depending on climatic conditions. Gibraltar Reservoir has been dry since November, 1989. This is the first time this has occurred since the dam was constructed in 1929. Lake Cachuma is at less than 25 percent of its storage capacity, the lowest level since 1957. Without significant inflow during the 1990 water year, reductions in delivery from Cachuma for the 1991 water year will be at least

55 percent of normal deliveries, and usage could empty the reservoir. Additional supplies now under consideration include both long term water supply projects and temporary emergency supplies. The Ionics' proposal has been selected by the City as a temporary emergency water supply to replace water that is currently unavailable to the City due to the drought.

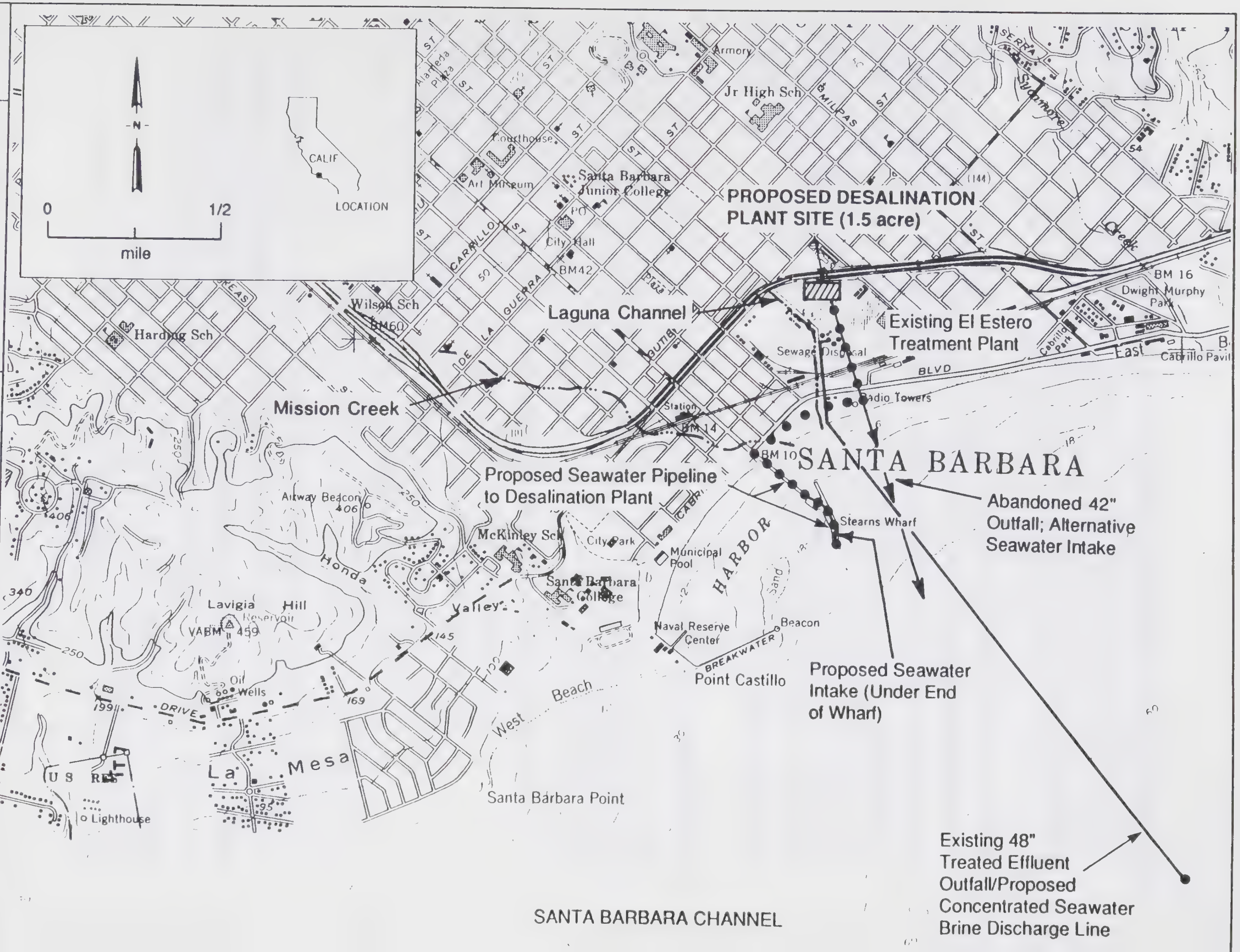
The City of Santa Barbara and its citizens already are facing serious consequences due to the current water shortage. The City declared a water emergency and implemented Stage III Drought regulations in February, 1990. In addition, the Governor of California declared a State of Emergency in drought stricken Santa Barbara on July 17, 1990. The emergency declaration will expedite review processing, and allow the City to use State employees, facilities, and equipment to alleviate the emergency. The City has declared a local emergency under the Emergency Services Act to allow the City to take actions to help expedite the development of this emergency water supply.

Project Details

The Ionics proposal, as currently envisioned, includes the following major components (refer to Figures 1 through 5):

- Reverse osmosis desalination plant (2,500 to 10,000 AFY capacity) to be constructed on vacant City-owned land (about 1.5 acres) adjacent to the El Estero Wastewater Treatment Plant and the Rescue Mission between Cabrillo Boulevard and U.S. 101 at 525 E. Yanonali Street in Santa Barbara; major components of the desalination plant would be trailer mounted to facilitate deployment, throughput flexibility, and decommissioning.

- Seawater intake structure to be constructed either: under the end of Stearns Wharf off of the City of Santa Barbara waterfront area; or along the abandoned 42-inch ocean outfall line which would be sleeved with a plastic pipeline insert; or along a new pipeline, paralleling the course of the abandoned outfall.



Project No. 906B128B

Santa Barbara Emergency Water Supply Project

Woodward-Clyde Consultants

Figure 1. GENERAL LOCATION OF IONICS' DESALINATION PLANT PROJECT COMPONENTS AS CURRENTLY ENVISIONED

August 1990

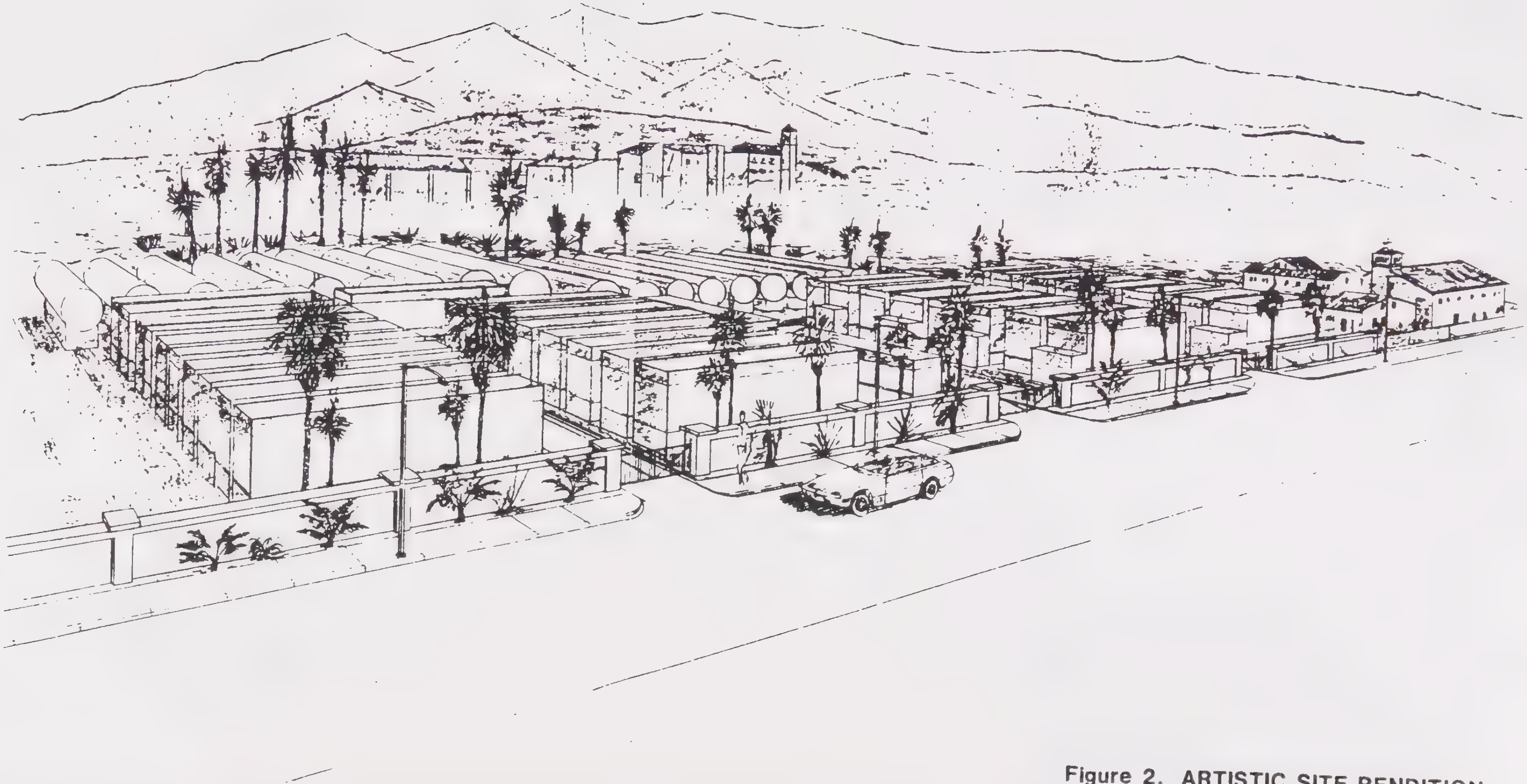
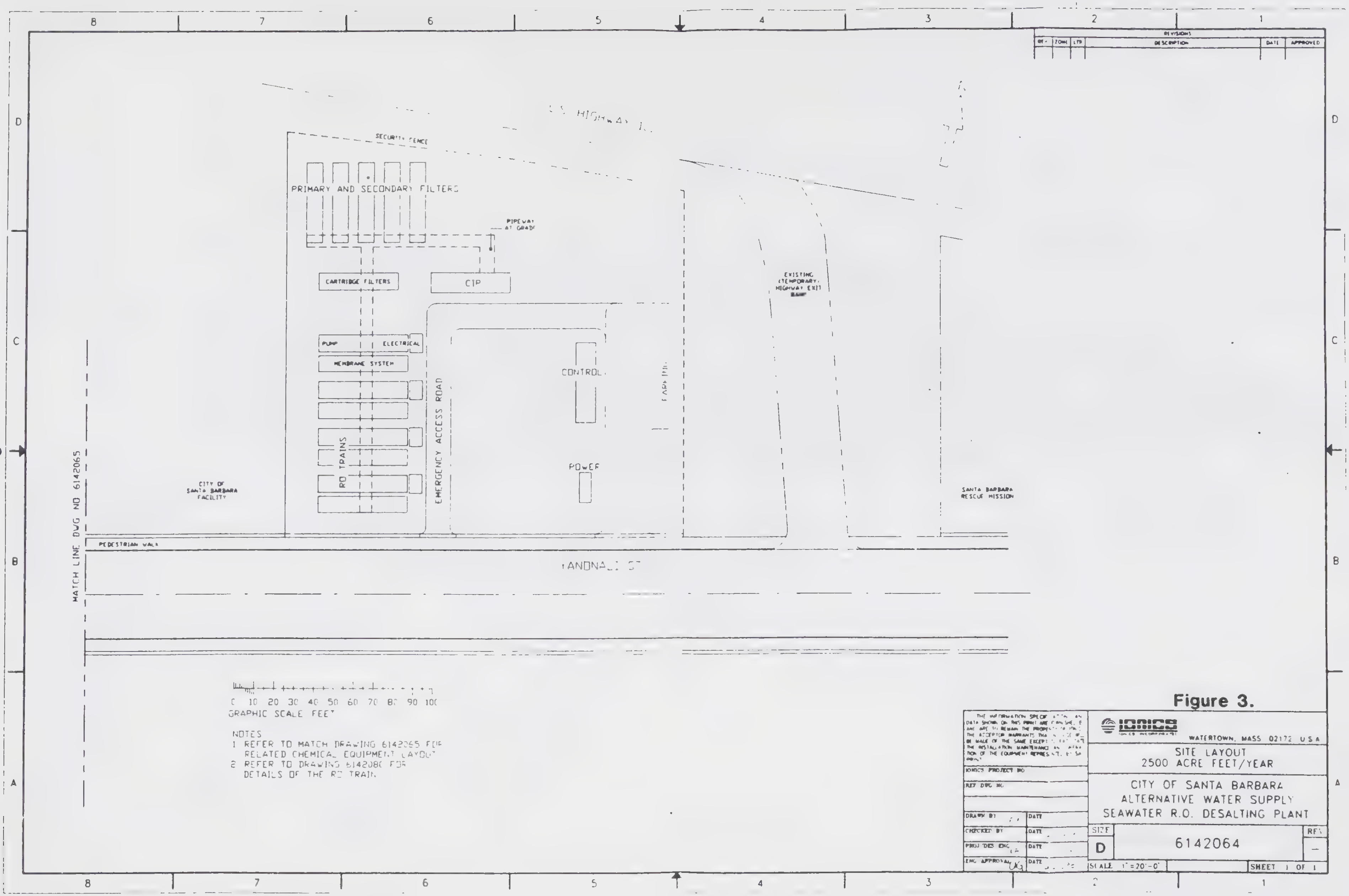


Figure 2. ARTISTIC SITE RENDITION



PRIMARY AND SECONDARY FILTERS
SECURITY FENCE
PIPEWAY AT GRADE
CARTRIDGE FILTERS
CIP
PUMP
ELECTRICAL
MEMBRANE SYSTEM
RO TRAINS
EMERGENCY ACCESS ROAD
CONTROL
POWER
EXISTING (TEMPORARY) HIGHWAY EXIT RAMP
CITY OF SANTA BARBARA FACILITY
SANTA BARBARA RESCUE MISSION
PEDESTRIAN WALK
MATCH LINE DWG NO 6142065
0 10 20 30 40 50 60 70 80 90 100
GRAPHIC SCALE FEET
NOTES
1 REFER TO MATCH DRAWING 6142065 FOR RELATED CHEMICAL EQUIPMENT LAYOUT
2 REFER TO DRAWING 6142080 FOR DETAILS OF THE RO TRAIN.
IONICS
WATERTOWN, MASS 02172 U.S.A.
SITE LAYOUT
2500 ACRE FEET/YEAR
CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER R.O. DESALTING PLANT
IONICS PROJECT NO
REF DWG NO
DRAWN BY
CHECKED BY
PROJ DES ENG
ENG APPROVAL
DATE
SIZE D
6142064
REV —
SCALE 1" = 20'-0"
SHEET 1 OF 1
REVISIONS
DESCRIPTION
DATE
APPROVED

Figure 3.

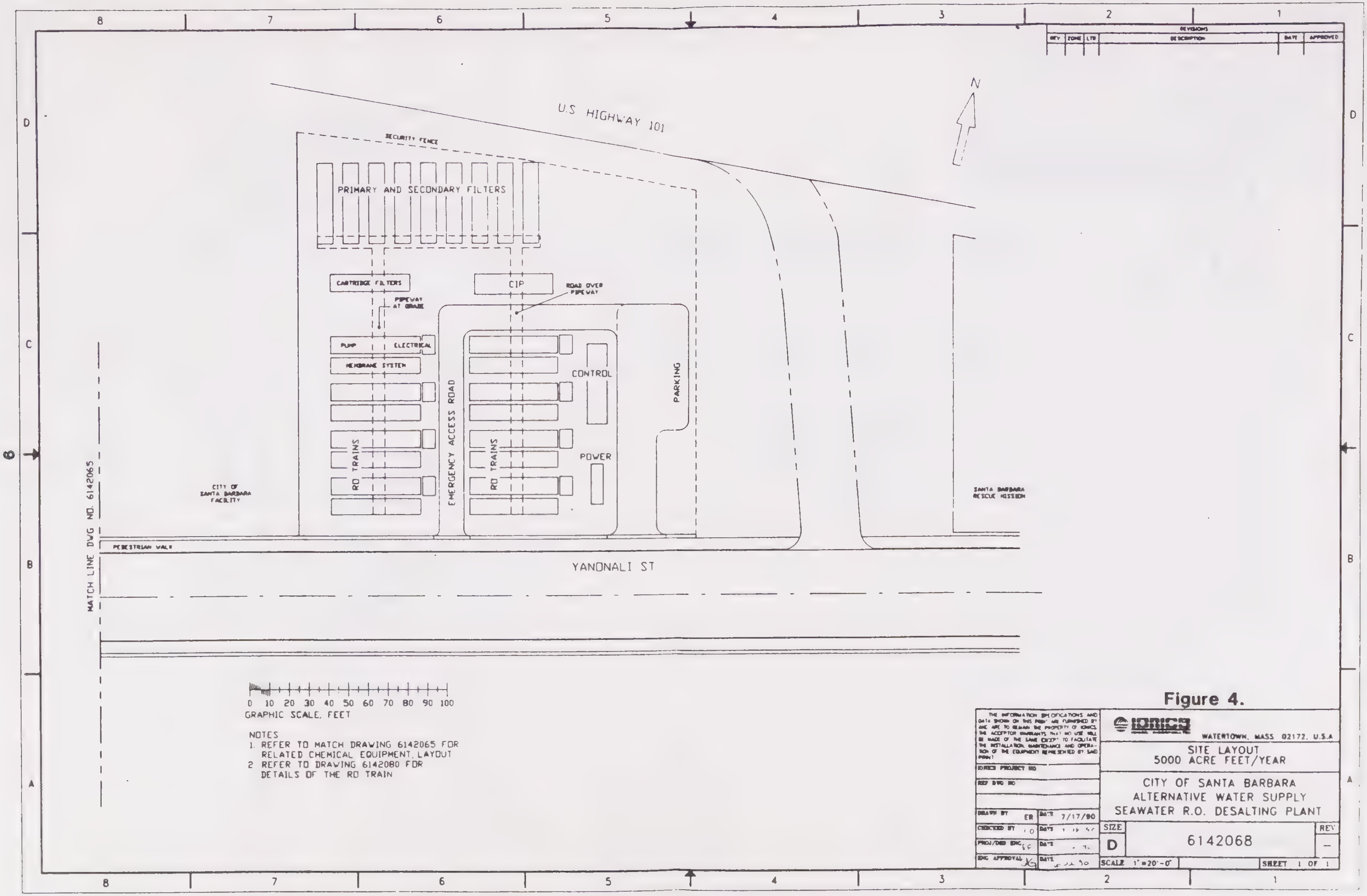
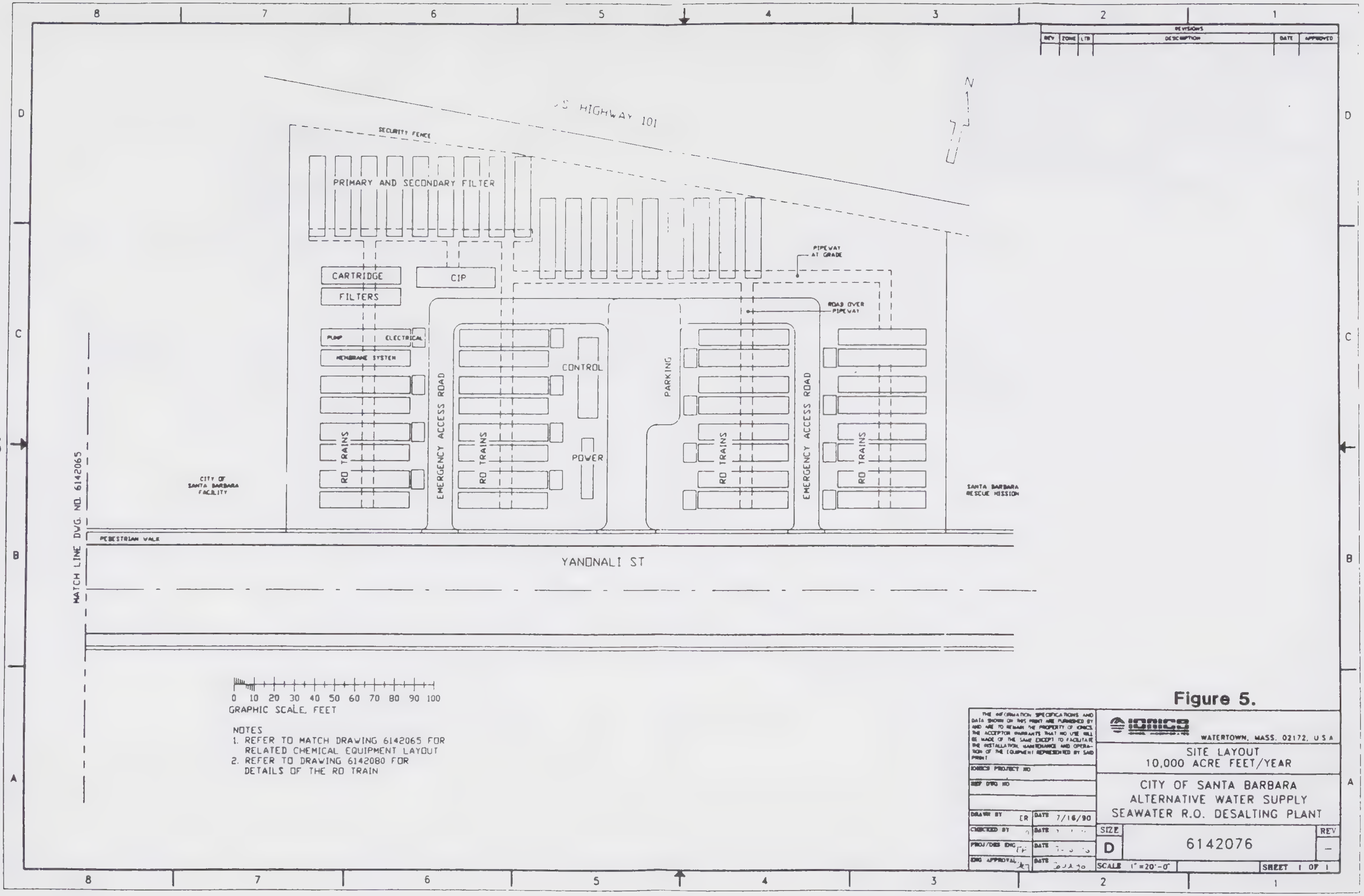

U.S HIGHWAY 101
N
SECURITY FENCE
PRIMARY AND SECONDARY FILTERS
CARTRIDGE FILTERS
CIP
ROAD OVER PIPEWAY
PIPEWAY AT GRADE
PUMP
ELECTRICAL
MEMBRANE SYSTEM
RO TRAINS
EMERGENCY ACCESS ROAD
RO TRAINS
CONTROL
POWER
PARKING
CITY OF SANTA BARBARA FACILITY
SANTA BARBARA RESCUE MISSION
MATCH LINE DWG NO. 6142065
PEDESTRIAN WALK
YANONALI ST
0 10 20 30 40 50 60 70 80 90 100
GRAPHIC SCALE, FEET
NOTES
1. REFER TO MATCH DRAWING 6142065 FOR RELATED CHEMICAL EQUIPMENT LAYOUT
2. REFER TO DRAWING 6142080 FOR DETAILS OF THE RO TRAIN
WATERTOWN, MASS 02172, U.S.A
SITE LAYOUT
5000 ACRE FEET/YEAR
CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER R.O. DESALTING PLANT
DRAWN BY ER
DATE 7/17/90
SIZE D
6142068
REV —
SCALE 1"=20'-0"
SHEET 1 OF 1

Figure 4.



US HIGHWAY 101
N
SECURITY FENCE
PRIMARY AND SECONDARY FILTER
CARTRIDGE
FILTERS
CIP
PIPEWAY AT GRADE
ROAD OVER PIPEWAY
PUMP
ELECTRICAL
MEMBRANE SYSTEM
CONTROL
POWER
PARKING
EMERGENCY ACCESS ROAD
RO TRAINS
CITY OF SANTA BARBARA FACILITY
SANTA BARBARA RESCUE MISSION
PEDESTRIAN WALK
YANONALI ST
MATCH LINE DWG. NO. 6142065
0 10 20 30 40 50 60 70 80 90 100
GRAPHIC SCALE, FEET
NOTES
1. REFER TO MATCH DRAWING 6142065 FOR RELATED CHEMICAL EQUIPMENT LAYOUT
2. REFER TO DRAWING 6142080 FOR DETAILS OF THE RO TRAIN
REVISIONS
REV
ZONE
LTR
DESCRIPTION
DATE
APPROVED
WATERTOWN, MASS. 02172, U.S.A
SITE LAYOUT
10,000 ACRE FEET/YEAR
CITY OF SANTA BARBARA
ALTERNATIVE WATER SUPPLY
SEAWATER R.O. DESALTING PLANT
DRAWN BY ER
DATE 7/16/90
CHECKED BY
PROJ/DES ENG
ENG APPROVAL
SIZE D
6142076
REV —
SCALE 1" = 20'-0"
SHEET 1 OF 1

Figure 5.

- Onshore/offshore pipelines (18- to 24-inch diameter) between desalination plant site and offshore seawater intake; onshore routes currently being considered include use of the onshore portion of the abandoned outfall and running the line along the existing pipeline/utility easement to the south of Cabrillo Boulevard; offshore routes currently being considered include stringing pipeline under and along Stearns Wharf, or running a pipeline through the abandoned outfall line with possible extension to intake location; or running a new pipeline parallel to the abandoned outfall; all alternatives would require associated pumping facilities (electric) and electrical tie-ins.

- Concentrated seawater brine discharge via the existing wastewater treatment plant secondary effluent ocean outfall; would also require construction of necessary interconnections and pumping facilities (electric).

- Interconnection of treated freshwater to City's distribution system.

Upon arrival at the desalination plant site, the seawater would be filtered and chemically treated. The water would then be pumped at high pressure through reverse osmosis membranes. Energy would be recovered from the brine water through a turbine. The brine solution would be piped to the existing sewer outfall, diluted with treated waste water from the El Estero Wastewater Treatment Plant and discharged into the ocean.

The product water would be treated to make the water nonaggressive (noncorrosive) to the mineral deposits on existing City water pipes. The finished water would be pumped into the Yanonali Street water main at a pressure that would allow water not used in that area of the City to be stored in City Reservoir 1. City Reservoir 1 is in the Barker Pass area near Cedar Lane. At the higher volume options, water would be pumped from Reservoir 1 to Sheffield Reservoir for gravity distribution to other parts of the City or other South Coast Water Purveyors.

The pretreatment and reverse osmosis equipment would be placed in trailers/containers on the desalination plant site. A stucco wall and landscaping along the perimeter of the site would be provided, as appropriate.

Ionics currently envisions that the facility would require about eight months to construct. Ionics estimates that an operation workforce of from two to four onsite personnel would be required, depending on the ultimate throughput capacity selected by the City for delivery.

ENVIRONMENTAL SETTING

The proposed project facility site is located adjacent to, and south of U.S. Highway 101 on Yanonali Street just west of Salsipuedes Street, in the City of Santa Barbara, California (see Figure 1). This site consists of two parcels, the larger of which lies between the highway and Yanonali Street. The smaller parcel is located across Yanonali Street.

The larger approximate 1.5 acre parcel is square-shaped and nearly flat. Elevation is about 40 feet mean sea level (MSL). Drainage is by intermittent sheetflow to the north and south and into adjacent street and highway storm drain systems. This parcel is devoid of vegetation and vacant. Several solid waste disposal containers are temporarily stored onsite.

An elevated section of Highway 101 is adjacent to the north of the parcel. The El Estero Wastewater Treatment Plant lies immediately across Yanonali Street to the south. The Spanish-style Santa Barbara Rescue Mission is located across the Salsipuedes Street highway offramp immediately to the east. The City Corporation Yard Annex abuts the parcel's western boundary.

The smaller approximate 0.14 acre parcel is triangle-shaped and slightly mounded with a gentle slope to the west. Elevation is about 40 feet MSL. Drainage is by intermittent sheetflow to the west and offsite over an unimproved road into a soft channelized open drain. The parcel is vacant, covered with iceplant, and supports a few exotic scrub pines.

A turn-around at the terminus of Yanonali Street is adjacent to the north of the parcel with the corporation yard beyond. An unimproved service road, and then Laguna Channel, abuts the southwest boundary. The wastewater treatment plant lies adjacent to the east.

Access to both parcels is gained directly on Yanonali Street from Salsipuedes Street to the east. The subject property and its surroundings are zoned Ocean-Oriented Manufacturing; Special Coastal District 3 (OM-1, S-D-3), with a General Plan designation of Public and Institutional, and Stream/Buffer use.

The landward portion of the proposed seawater intake pipeline route would be within existing water and sewer line easements located along the northern and western boundary of the El Estero Wastewater Treatment Plant property. These easements run on southerly under the railroad tracks and East Cabrillo Boulevard to a point in Chase Palm Park near the beach. The easements turn southwesterly parallelling Cabrillo, where they cross Laguna Channel and Mission Creek on the way towards Stearns Wharf. The seaward section of the proposed intake pipeline would run atop and/or under the pier deck of Stearns Wharf to its end.

The seawater intake pipeline alternatives would be within existing water and sewer line easements along the northern boundary of the El Estero Plant. The line would then cross plant property to enter the existing abandoned sewer outfall near the southeast corner. This pipeline would run inside the outfall under the railroad, East Cabrillo Boulevard, Chase Palm Park, and the beach. The pipeline would then extend seaward either inside the outfall or as a separate, independent line, to terminate at a currently unidentified distance offshore.

Both onshore pipeline routes are nearly flat and at about elevation 40 MSL. Drainage is generally intermittent sheetflow over and off these easements. Vegetation is mostly limited to exotic weeds and grasses, shrubs, lawns, and possibly a few eucalyptus and palm trees. Disturbed emergent vegetation grows in the Laguna Creek and Mission Creek channels where the routes cross them. The routes do not contain structures except for the railroad, Cabrillo Boulevard, sidewalks, bridges, and the wharf.

The land uses within the alternative pipeline corridors include public utilities, industrial, public transportation, open space, park and vacant land.

PROJECT NO. SB-106-90

ENVIRONMENTAL CHECKLIST FORM

To Be Completed by Lead Agency

I. **PROJECT NAME: Emergency Water Supply Desalination Project**

II. **NAME, ADDRESS, TELEPHONE OF APPLICANT:** David Johnson, City Public Works Department; and William Katz, Ionics, Incorporated, 65 Grove Street, Watertown, Massachusetts 02172 (617) 926-2500

III. **ENVIRONMENTAL IMPACTS:**

(Explanation of "yes" and "maybe" answers on attached sheets)

	YES	MAYBE	NO
1. Geology and Soils. Will the proposal result in:			
a. Unstable earth conditions or changes in geologic substructures?	__	__	x
b. Disruptions, displacements, compaction or over-covering of the soil?	__	x	__
c. Change in topography or ground surface relief features?	__	__	x
d. The destruction, covering or modification of any unique geologic or physical features?	__	__	x
e. Any increase in wind or water erosion of soils, either on or off the site?	__	__	x*
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	__	x	__
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, ground failure, mud-slides or similar hazards?	__	x	__

		YES	MAYBE	NO
2.	Air Quality. Will the proposal result in:			
a.	Substantial air emissions or deterioration of local or regional ambient air quality?	_	_	x*
b.	The creation of objectionable odors?	_	_	x
c.	Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	_	_	x
3.	Water. Will the proposal result in:			
a.	Changes in currents, or the course of direction of water movements, in either marine or fresh water?	_	x	_
b.	Changes in absorption rates, drainage patterns or the rate and amount of surface water runoff?	_	_	x*
c.	Alterations to the course or flow of flood waters?	_	_	x*
d.	Change in the amount of surface water in any water body?	_	_	x
e.	Exposure of people or property to water related hazards such as flooding or tsunamis?	_	_	x*
f.	Substantial reduction in the amount of water available for public water supplies?	_	_	x
g.	Discharge into surface waters, or in the alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	x	_	_
h.	Change in the quantity of ground waters, either through direct additions or withdrawals or through interception of an aquifer by cuts or excavations?	_	_	x
i.	Alteration of the direction or rate of flow of ground waters?	_	_	x
4.	Plant Life. Will the proposal result in:			
a.	Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops and aquatic plants)?	_	x	_
b.	Reduction in numbers or habitat area of any unique, rare or endangered plant species?	_	x	_

			YES	MAYBE	NO
	c.	Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?	__	__	x
	d.	Reduction in acreage of any agricultural crop?	__	__	x
5.	Animal Life. Will the proposal result in:				
	a.	Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	__	x	__
	b.	Reduction of numbers or habitat area of any unique, rare or endangered animal species?	__	x	__
	c.	Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	__	x	__
	d.	Deterioration to existing fish or wildlife habitat?	__	x	__
6.	Noise. Will the proposal result in:				
	a.	Increases in existing noise levels?	__	x	__
	b.	Exposure of people to severe noise levels?	__	x	__
7.	Light and Glare. Will the proposal produce new light and glare?		__	__	x
8.	Land Use. Will the proposal result in:				
	a.	A substantial alteration of the present or planned land use of an area?	__	__	x
	b.	Non-conformance with existing zoning and general plan designations?	__	__	x*
9.	Natural Resources. Will the proposal result in:				
	a.	Increases in the rate of use of natural resources?	__	__	x*
	b.	Substantial depletion of any nonrenewable natural resource?	__	__	x*

	YES	MAYBE	NO
10. Risk of Upset. Will the proposal involve:			
a. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset condition?	_	x	_
b. Possible interference with an emergency response plan or an emergency evacuation plan?	_	_	x
11. Population. Will the proposal alter the location, distribution, density or growth rate of the human population of an area?	_	_	x*
12. Housing. Will the proposal affect existing housing, or create a demand for additional housing?	_	_	x*
13. Transportation/Circulation. Will the proposal result in:			
a. Generation of substantial additional vehicular movement?	_	_	x*
b. Effects on existing parking facilities, or demand for new parking?	_	_	x
c. Substantial impact upon existing transportation systems?	_	_	x*
d. Alterations to present patterns of circulation or movement of people and/or goods?	_	_	x*
e. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	_	_	x
f. Alterations to waterborne, rail or air traffic?	_	_	x*
14. Public Service. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:			
a. Fire protection?	_	_	x
b. Police protection?	_	_	x
c. Schools?	_	_	x
d. Parks or other recreational facilities?	_	_	x

		YES	MAYBE	NO
e.	Maintenance of public facilities, including roads?	_	_	x
f.	Other governmental services?	_	_	x

15. Energy. Will the proposal result in:

		YES	MAYBE	NO
a.	Use of substantial amounts of fuel or energy?	_	_	x*
b.	Substantial increase in demand upon existing energy sources or require the development of new sources?	_	_	x*

	YES	MAYBE	NO
16. Utilities. Will the proposal result in a need for new systems, or substantial alterations to public utilities (i.e. water, sewer, power, storm drainage, telephone)?	_	_	x*

17. Human Health. Will the proposal result in:

		YES	MAYBE	NO
a.	Creation of any health hazard or potential health hazard (excluding mental health)?	_	x	_
b.	Exposure of people to potential health hazards?	_	x	_

	YES	MAYBE	NO
18. Visual. Will the proposal obstruct any scenic vista or view open to the public or create an aesthetically offensive site open to public view?	_	x	_
19. Recreation. Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	_	x	_

20. Cultural Resources.

		YES	MAYBE	NO
a.	Will the proposal result in the alteration of or the destruction of a prehistoric or historic archaeological site?	_	x	_
b.	Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure or object?	_	x	_
c.	Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?	_	_	x
d.	Will the proposal restrict existing religious or sacred uses within the potential impact area?	_	_	x

	YES	MAYBE	NO
21. Mandatory Findings of Significant Environmental Effect.			
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of major periods of California's history or prehistory?	_	x	_
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	_	x	_
c. Does the project have environmental effects which are individually limited but cumulatively considerable?	_	_	x
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	_	x	_
22. Alternatives to the Proposed Action. Does the project require the discussion and evaluation of a range of reasonable alternatives which could feasibly attain the basic objectives of the project?	x	_	_

IV. DISCUSSION OF ENVIRONMENTAL EVALUATION AND MITIGATION MEASURES:

See attached narrative description of the environmental impacts.

* = An explanation is attached although a "no" is indicated.

V. RECOMMENDATION OF THE ENVIRONMENTAL ANALYST

On the basis of this initial evaluation:

__ I find the proposed project will NOT have a significant adverse environmental effect, and a NEGATIVE DECLARATION should be prepared.

__ I find that although the proposed project could have a significant adverse environmental effect, there would not be a significant effect in this case if the project amendments described herein are included in the project. A NEGATIVE DECLARATION should be prepared.

ENVIRONMENTAL CHECKLIST FORM (Continued)

_x_ I find that the proposed project MAY have a significant adverse environmental effect, and an ENVIRONMENTAL IMPACT REPORT should be prepared.

__ I find that the project MAY have a significant adverse environmental effect and the impact is described in the

Mitchell H. Odrender
Signature

8/24/90
Date

DETERMINATION OF THE ENVIRONMENTAL REVIEW COMMITTEE

EIR
(Action)

8/24/90
(Date)

ENVIRONMENTAL IMPACT DISCUSSION

1. Geology and Soils

b., e., f., and g.

Potential for impacts in this area is primarily related to: disruptions, displacements, and compaction of soils; deposition or erosion of beach sands and modifications of the ocean floor; and exposure of people and property to earthquakes and ground failures.

The facility site is underlain by poor fill materials with high liquefaction potential. The site and surrounding neighborhood were originally wetlands, later reportedly filled with 1925 earthquake debris. Groundwater levels are high and ground shaking from local or distant fault movement could affect the property.

The onshore portions of the project seawater intake pipeline routes may be subject to the same conditions described above. Trenching and installation of the pipelines could result in deposition on, or erosion of the beach. Seaward extensions of the lines and the intake pipes and pumps could also be effected by groundshaking. Installation of these intake pipes and pumps might result in modifications to the ocean floor if they lie on or near it. Construction of the project may result in significant impacts related to geology and soils.

Due to the nearly flat landform of the facility site and alternative pipeline routes, wind and water erosion of the surface, except at the beach, is expected to be minimal.

2. Air Quality

a.

Assessment of potential air quality effects includes: generation of air emissions and deterioration of local or regional ambient air quality.

The proposed project would require considerable electricity to drive reverse osmosis desalination as well as to pump seawater to the facility for treatment. Maximum energy demand is estimated

to be on the order of two to eight megawatts. The proposed desalination plant and associated pumps would all be electrically driven, therefore no air emissions would be generated by operation of the project in Santa Barbara. The associated increase in output at power energy generation sites could degrade air quality at the point(s) of generation, although Southern California Edison (SCE) has indicated that they have sufficient excess capacity in their system to supply the electricity for the proposed project. SCE reports that their electrical utility system is supplied by the following energy sources (for the 12 months ending June 30, 1990): natural gas = 20.5 percent; nuclear = 17.8 percent; coal = 12.1 percent; oil = 4.1 percent; hydroelectric = 3.5 percent; and purchased power = 42 percent. All of these sources have been previously approved, including associated air quality permits.

Facility operational vehicle trips (four employees, eight PHT) are expected to be minimal and any related impacts to air quality should not be significant (0.18 lb/peak hour THC, 0.17 lb/peak hour RHC, 0.22 lb/peak hour NO_x).

Short-term air quality impacts such as an increase in particulate emissions could result from construction activities. However, significant impacts should not occur if standard dust control measures are implemented.

3. Water

a., b., c., e., and g

Potential for impacts associated with water are primarily related to: changes in marine currents; exposure of property to flooding or tsunamis; and discharge or alteration of ocean water quality.

The facility site may be subject to inundation by 100 year floods. Flood waters in the area could cover wide areas of the relatively flat land. For planning purposes, it is reported that a 10-foot high tsunami wave with a runup to the 40 foot elevation (MSL) should be considered maximum. Such a wave would inundate most of the immediate coast line. A tsunami could affect seaward pipeline alternatives both in the vicinity of the abandoned outfall and on the wharf. However, present construction codes include requirements which mitigate, to the degree possible, tsunami impacts.

Project seawater intake pipes could cause localized changes in ocean currents. Both intake of seawater and discharge of brine could alter the water quality of the ocean in the vicinity of the outfall. Intake pumps may affect turbidity at or near intake pipes. Brine discharge could affect temperature, salinity, and turbidity, potentially resulting in significant water quality impacts.

Construction of the desalination facility would result in impervious surfaces which in turn will reduce site absorption rates as well as increase the rate and amount of runoff. However, increased rate and amount of runoff is expected to be minimal. Receiving stormdrain systems should have adequate capacity to handle increased flows. This facility is not expected to significantly alter the coverage or flow of floodwaters. Although, the site could be elevated out of the flood plain level, flood flow recession should continue unimpeded into the Laguna Channel nearby. No significant flooding or run-off impacts are expected to occur.

4. Plant Life

a., b.

Potential effects associated with plant life include: changes in diversity of riparian wetland and marine species; and reduction of riparian wetland and marine habitat area.

The Laguna Channel and Mission Creek pipeline route crossings support disturbed emergent and aquatic vegetation. Although of poor quality, this vegetation may be considered representative of valuable riparian wetlands. Installation of lines through these streams could result in elimination of or damage to this vegetation. It is currently expected that the pipeline could be suspended on the existing bridge structures thereby avoiding effects to riparian vegetation. If the pipelines are not suspended significant impacts on riparian vegetation could occur.

Four forests of giant kelp are within one mile of the coast line. Harbor Reef and One-Mile Reef are located in the general vicinity of the southern end of the existing ocean wastewater outfall. Project brine discharge through this outfall could affect vegetation associated with these reefs and possibly the kelp beds beyond, potentially resulting in significant impacts.

5. Animal Life

a., b., c., and d.

Potential impacts to animal life include: changes in diversity or numbers of riparian wetland and marine species; reduction of riparian wetland and marine habitat area; introduction of a barrier to migration of marine species; and deterioration to existing marine fish habitat.

The Laguna Channel and Mission Creek crossings could support species typical of disturbed riparian habitat of this type. Although generally regarded as common, these species may be considered representative of valuable riparian wetlands. It is currently expected that the pipeline could be suspended on the existing bridge structures thereby avoiding effects to riparian vegetation. Installation of pipelines could destroy or displace these species, potentially resulting in significant impacts.

Near shore environments within the vicinity of the project are reported to be primarily sandy flats. This homogenous habitat is expected to support organisms typical of such surroundings. Wharf pilings generally result in habitat attractive to species ordinarily found at reefs. Organisms are therefore considerably more diverse.

Operation of intake pumps could result in entrainment of plankton, fish, and eggs. Entrained organisms would be destroyed where exposed to the desalination process. If screening is used marine organisms could be trapped ("impinged") and may perish. The operation of the intake system could result in significant impacts on marine life.

Santa Barbara Coastal waters are characterized by a variety of marine habitats including rocky reefs, kelp beds, and sand flats. These habitats support a rich assemblage of species. Four forests of giant kelp lie within one mile of the coast line while Harbor Reef and One-Mile Reef are in the vicinity of the existing ocean outfall. Marine organisms in the area could be significantly affected by any changes in temperature, light, and nutrients associated with discharge of project brine.

6. Noise

a. and b.

Potential noise impacts are primarily related to : increased levels of noise from the project; and exposure of people to severe ambient and/or project noise levels.

The facility site lies adjacent to an elevated section of U.S. Highway 101 in and industrial use area. Ambient noise levels may exceed significance thresholds. Project pumps may generate noise at levels exceeding significance thresholds. The intake pump under the pier may also create vibrations affecting persons on the wharf and marine organisms below. A noise study will be performed to monitor existing noise levels and to assess the appropriate level of noise mitigation required to limit noise impacts to acceptable levels.

Construction activities may result in high noise levels at an near the facility and pipeline routes. These levels are expected to be within normal limits.

8. Land Use

b.

The project site and surroundings are designated Major Public and Institutional, Stream/Buffer by the City of Santa Barbara General Plan and LCP. It is zoned Ocean-Oriented Manufacturing with a coastal zone overlay (OM-1, S-D-3). The proposed desalination facility conforms to such designated use.

The project is exempt from City Ordinance No. 4628 (Interim Ordinance implementing the short-term provisions of the Charter Section 1508). This is a nonhabitable project to be used exclusively for regional public utility facilities.

9. Natural Resources

a. and b.

Potential impacts on natural resources include: increases in the rate of use of natural resources; and depletion of nonrenewable natural resources.

Project consumption of natural resources is mostly limited to electrical energy. Increased rate of energy use should not be significant and would not be considered to result in a substantial depletion of nonrenewable natural fuel resources, given that Southern California Edison has sufficient electrical capacity available, and the project is temporary.

10. Risk of Upset

b.

Potential for risk of upset is related to: the possible release of hazardous chemicals. In addition, the addition of facilities on Stearns Wharf could potentially affect its structural integrity and/or increase its susceptibility to storm damage. If the wharf is to be used to support the weight of the intake pipeline and intake structures, the potential effects on the wharf will be fully investigated.

Project facility chemical usage would likely include chlorine, ferric chloride, sulfur dioxide, carbon dioxide, anti-scalant, and caustic soda.

The project chemical area is relatively isolated from populated areas. The wastewater treatment plant abuts the parcel on one side and an unimproved road and open drain on another. The remaining boundary fronts the terminus of Yanonali Street. Surrounding uses beyond are generally industrial with the exception of the Rescue Mission, an overnight shelter with facilities for 104 people and 10-15 employees.

In the unlikely event of a chemical spill, it would be expected to be well contained. However, such a spill could present a health and safety hazard to any desalination and/or wastewater

personnel nearby. Further, spilled chemicals might enter the Laguna Channel just off-site. There is a potential for significant impacts related to risk of upset.

11. Population

Potential impacts on population are related to: alterations of the location, distribution, density or growth rate of the human population of an area.

This project is intended to temporarily augment the City water supply by up to 5000 acre feet per year for up to five years. It is proposed in response to a drought-induced emergency and supports supply demanded by the existing population. No additional growth is likely to occur as a result of this project. CEQA requires, however, that growth inducing impacts be discussed in any EIR on the project.

12. Housing

Potential impacts to housing are related to: effects on existing housing or creation of demand for additional housing.

As discussed above, the project supports provision of water for existing housing. It does not create a demand for or support additional housing.

13. Transportation and Circulation

a., c., d., and f.

Potential traffic and circulation impacts are related to: generation of traffic trips; impacts to existing street systems; alterations of circulation patterns; and alterations to waterborne and rail traffic.

Access to the project facility would be directly on Yanonali Street from Salsipuedes Street. Both streets are fully improved. Project vehicle trips are expected to be minimal (two PHT/employee for four employees) and long-term impacts to existing street systems should not be significant.

One facility design alternative (10,000 AFY) would necessitate closure of the Salsipuedes/Highway 101 off-ramp at the eastern boundary of the project site. This off-ramp is only temporary and provides voluntary mitigation of freeway construction impacts. Closure of this off-ramp would therefore not constitute a significant impact. Project pipeline construction activities may require restricted traffic movement on East Cabrillo Boulevard. These temporary construction activities may restrict bicycle and pedestrian movement on sidewalks along Cabrillo and the parallel bicycle path through Chase Palm Park. Pipeline installation at the wharf, if the pipe is laid on the wharf, could affect pedestrian traffic throughout the life of the project.

Should pipeline installation under the railroad become necessary, it might temporarily affect freight and passenger train service during the construction period. The alternative intake location along the abandoned outfall line could restrict boat movement within a limited area which would be marked by buoys -- this potential effect would not be considered significant.

15. Energy

Potential effects on energy involve: use of additional quantities of fuel; and increases in demand on existing energy sources.

Maximum energy demand of the project is estimated to be on the order of two to eight megawatts of electrical power. Although considerable, this demand would reportedly be within the existing capacity of the Southern California Edison (SCE) system. Initial consultation with SCE indicates that there is sufficient capacity in the distribution grid to meet the needs of the project. No significant impacts on energy are expected to occur.

16. Utilities

Potential effects on utilities are related to: the need for new water or electrical power systems.

There is a water main at the project site. Facility-produced water supply would be injected directly into this main. Power lines (16,000 volts) are also available at or near the site for connection to obtain electricity. It is likely a new transformer will need to be constructed at the desalination plant site for the project. No significant impacts are expected to occur.

17. Human Health

a. and b.

Potential human health impacts are associated with: creation of health hazards or potential health hazards; and exposure of people to potential health hazards.

A chemical spill could occur at the project chemical area. Although such a spill would be expected to be well contained, it could present a health hazard to facility personnel or other persons nearby. <u>There is a potential for significant effects on human health as a result of chemical spills.</u>

The water supply produced by the project facility would contain potassium, sodium, magnesium, calcium, zinc, bicarbonate, chloride, sulfate and phosphate. Levels of these chemicals would be required to be below state standards.

The alternative intake pipe along the abandoned outfall would be located in an area where boats may discharge waste water containing bacteria and viruses. The proposed intake below the wharf could be positioned where currents might carry similar contaminants from the nearby harbor. Both alternative intakes could receive contaminants from non-point sources such as storm drains.

18. Visual

Assessment of visual impacts usually focuses on: obstruction of scenic vistas or views open to the public or the creation of an aesthetically offensive site open to public view.

The project facility would be visible to the public in vehicles on Highway 101 which is considered to be a major entrance to the City. The project site can also be seen from residential areas on foothills on the north.

An artist's rendition of the facility depicts a utilitarian industrial design including a row of above ground cylindrical tanks and several rows of modular single story structures.

The facility is compatible in appearance with surrounding industrial buildings, the wastewater treatment plant, and Corporation Yard. However, it is a visual departure from the adjacent Spanish-style Rescue Mission.

A large pipeline currently rests on top and runs the length of the wharf. If the project pipeline is laid atop the pier, it may appear appropriate to the visual setting to some people. However, other persons might find another pipe visually unpleasant. <u>There is a potential for significant adverse visual and aesthetic impacts as a result of the project.</u>

19. <u>Recreation</u>

Potential effects on recreation are related to: impacts on the quality or quantity of existing recreational opportunities.

The wharf is an established recreational fishing pier. This wharf also has high recreational value for persons walking out over the water as well as frequenting the restaurants and other commercial businesses.

Installation of a project pipeline on the wharf could detract from the recreational experience. Presence of the pipe could affect pedestrian flow and reduce aesthetic qualities. Intake pump noise and vibration could be distracting.

Project intake, pipe and pump effects on marine habitat and organisms under the pier could reduce both the quality and quantity of fish available for taking by anglers on the wharf.

Construction activities along pipeline routes crossing Chase Palm Park could restrict bicycle movement, walking, jogging, and other recreational pursuits in its path. <u>There is a potential for significant adverse impacts on the use of recreational facilities as a result of this project.</u>

20. <u>Cultural Resources</u>

a. and b.

Potential impacts on cultural resources are related to: alteration or destruction of a prehistoric or historic archaeological site; and adverse physical or aesthetics effects to a prehistoric or historic building, structure or object.

Numerous archeological sites are known to exist in the Santa Barbara area. Several Chumash Indian village sites have been found in and near the Waterfront Area. There are numerous historical sites throughout the City. The wharf was originally built in the late 1800's for whaling. The abandoned sewer outfall was constructed circa 1925.

Numerous marine archaeology sites are known offshore in the Santa Barbara area. The most common resource in this area are shipwrecks, although no known shipwrecks have been identified in the study area.

Construction of project facilities could disturb or destroy cultural resources which may occur at the facility site and along pipeline routes. Installation of seaward pipelines could damage historical structures, if present. <u>Project construction could result in significant impacts on cultural resources.</u>

21. <u>Mandatory Findings of Significance Environmental Effects</u>

a., b., and d.

The project has the potential to degrade the quality of the environment through possible negative effects on geology and soils, water, plant and animal life, noise, risk of upset, human health, visual, recreation, and cultural resources. This project could also substantially reduce habitat of fish species as well as possibly affect important examples of major periods of California's history or prehistory. There is also a potential to achieve the short-term goal of providing adequate water during an emergency to the disadvantage of the long-term goal of protecting cultural resources. Finally, the project could have health and safety impacts which might cause direct

or indirect adverse effects on human beings. Each of these elements are discussed in more detail in the subsections above.

22. Alternatives To The Proposed Action

The project requires the discussion and evaluation of a range of reasonable alternatives which could feasibly attain the basic temporary objectives of the project. The alternatives would include, but not be limited to: other desalination proposals at the project site; other desalination sites and seawater intake locations; tanker transport of fresh water from outside the area; increased conservation; increased use of reclaimed water; groundwater, including deep bedrock wells; and State water via Lake Casitas.

RECOMMENDED FINDINGS

<u>Potential Significant Effects</u>

On the basis of this initial study it has been found that the proposed project may have significant effect pertaining to:

- Geology and Soils
- Water
- Plant Life
- Animal Life
- Noise
- Risk of Upset
- Human Health
- Visual
- Recreation
- Cultural Resources
- Growth-inducing Impacts (added by ERC at Hearing on August 24, 1990)

Further, the following three questions as to mandatory findings of significant environmental effects should be answered:

1) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of major periods of California's history or prehistory?

2) Does the project have the potential to achieve short-term, to the disadvantage of long-term, goals?

3) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

While CEQA does not require the discussion of the economic effects of a project, such a discussion is allowed. Staff would recommend inclusion of economic effects in the EIR, due to the questions raised during the public review process. This discussion would include information on how this project would affect water billing rates.

It has also been found that the project requires a discussion and evaluation of a range of reasonable alternatives which could feasibly attain the basic objectives of the project.

Consequently, staff recommends that an ENVIRONMENTAL IMPACT REPORT should be prepared, and that it should focus on the topics listed above.

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
NOP MAILING LIST #1
RESPONSIBLE AGENCIES (via Certified Mail)
(8/27/90)

California Department of
Fish and Game
1416 Ninth Street, 12th
Floor
Sacramento, CA 95814

State Clearinghouse
Office of Planning and
Research
1400 Tenth Street
Sacramento, CA 95814

Mr. James Slawson, Chief
Habitat Conservation
Branch NOAA - National
Marine Fisheries Service
300 S. Ferry Street
Terminal Island, CA 90731

Mr. Peter Cantle
Santa Barbara County Air
Pollution Control District
26 Castillian Drive, B-23
Goleta, CA 93117

Mr. Jeff Fong, Land Agent
State Lands Commission
1807 13th Street
Sacramento, CA 95814

Mr. Steve Senet
California Department of
Transportation
50 Higuera Street
San Luis Obispo, CA 93401

Mr. Kris Lal
California Department of
Fish & Game
245 W. Broadway
Long Beach, CA 90802-4467

Mr. William Meece
Water Quality Control
Board
Central Coast Region
1102-A Laurel Lane
San Luis Obispo, CA 93401

Ms. Kathryn Gualtieri,
SHPO
State Office of Historic
Preservation
P.O. Box 2390
Sacramento, CA 95811

Ms. Annette Ospital
Native American Heritage
Commission
915 Capitol Mall, Room 288
Sacramento, CA 95814

Mr. Jack Fancher
U. S. Fish & Wildlife
Service
Laguna Niguel Field Office
24000 Avial Road
Laguna Niguel, CA 92656

Captain of the Port
Coast Guard
111 Harbor Way
Santa Barbara, CA 93101

Mr. Chuck Holt
U. S. Army Corp of
Engineers
P.O. Box 2711
Los Angeles, CA 90053

California Coastal
Commission
South Central Coastal Zone
925 de la Vina
Santa Barbara, CA 93101

Mr. John Curphey
DOHS-Office of Drinking
Water
530 E. Montecito Street,
Ste. 102
Santa Barbara, CA 93103

Ms. Helen Denney
USCG, 11th District
Commander (OAN)
400 Ocean Gate
Long Beach, CA 90822

Mr. Ed Brown
California Coastal
Commission
640 Capitola Road
Santa Cruz, CA 95062

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
NOP MAILING LIST #2
SECONDARY LIST (via First Class Mail)
(8/27/90)

Environmental Defense Center
906 Garden Street, Suite 2
Santa Barbara, CA 93101

Network
c/o Gregory Helms
P.O. Box 2034
Santa Barbara, CA 93120

Community Environmental Council
930 Miramonte Dr.
Santa Barbara, CA 93109

Citizens Planning Association
916 Anacapa St.
Santa Barbara, CA 93101

League of Women Voters
1217-A De La Vina
Santa Barbara, CA 93101

Goleta Water District
4699 Hollister Ave.
P.O. Box 788
Goleta, CA 93117

Montecito Water District
P.O. Box 5037
Santa Barbara, CA 93150

Summerland Water District
P.O. Box 346
Summerland, CA 93067

Carpinteria Water District
P.O. Box 578
Carpinteria, CA 93013

Southern Pacific Railroad
209 State Street
Santa Barbara, CA 93101

James M. Doyle
Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001

Dennis O'Bryant
Department of Conservation
1416 Ninth Street, Rm 1326-2
Sacramento, CA 95814

Anne Geraghty
Air Resources Board
1131 S Street
Sacramento, CA 95814

Nadell Gayou
Department of Water Resources
1416 Ninth Street
Rm. 215-4
Sacramento CA 95814

Mr. Ken Warfield
Santa Barbara Public Library
1021 Anacapa Street
Santa Barbara, CA 93102

Santa Barbara County Flood Control and Water Agency
123 E. Anapamu Street
Santa Barbara, CA 93101

Santa Barbara County Division of Environmental Review
123 E. Anapamu Street
Santa Barbara, CA 93101

Ms. Eva Diaz
County of Santa Barbara Environmental Health
5540 Ekwill, Ste. B
Santa Barbara, CA 93111

Ms. Caroline Osborne
1424 Castillo Street
Santa Barbara, CA 93101

Ms. Elizabeth Burke
2000 Las Canoas Rd.
Santa Barbara, CA 93105

Mr. John Baum
2107 Mountain Ave.
Santa Barbara, CA 93101

Ms. Linda Krop
906 Garden St., Ste. 2
Santa Barbara, CA 93101

Mr. Jim Bell
P.O. Box 91815
Santa Barbara, CA 93190

Dean May, Manager
La Cumbre Municipal Water Company
695 Via Tranquilla
Santa Barbara, CA 93110

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
NOP MAILING LIST #2
SECONDARY LIST (via First Class Mail)
(8/27/90) (continued)

Ms. Suzanne Butterfield
Department of Water
Resources
Division of Local Assistance
P.O. Box 942836
Sacramento, CA 94236-0001

STATE OF CALIFORNIA—OFFICE OF THE GOVERNOR

GEORGE DEUKMEJIAN, Governor

OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

RECEIVED

SEP 1 0 1990

CITY OF SANTA BARBARA
PLANNING

DATE: Sep 05, 1990

TO: Reviewing Agency

RE: CITY OF SANTA BARBARA's NOP for
DESALINATION PROJECT
SCH # 90010859

Attached for your comment is the CITY OF SANTA BARBARA's Notice of Preparation of a draft Environmental Impact Report (EIR) for the DESALINATION PROJECT.

Responsible agencies must transmit their concerns and comments on the scope and content of the EIR, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

MITCH OSHINSKY
CITY OF SANTA BARBARA
630 GARDEN STREET
SANTA BARBARA, CA 93102-1990

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call Terri Lovelady at (916) 445-0613.

Sincerely,

Terri Lovelady for

David C. Nunenkamp
Deputy Director, Permit Assistance

Attachments

cc: Lead Agency

NOP Distribution List

SCH# 90010659

S = sent by lead agency
X = sent by SCH

Resources Agency

[ ] Karen Cagle
Dept. of Boating & Waterways
1629 S Street
Sacramento, CA 95814
916/445 6281

[X] Gary L. Holloway
California Coastal Commission
631 Howard Street, 4th Floor
San Francisco, CA 94105
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OTHER: ____________

TRAFFIC SUPPLEMENT
FOR
APPENDIX C

While the Environmental Review Committee did not request that traffic impacts be included in the EIR, the Committee did express some concern about the potential for construction-related impacts on traffic. In response to the ERC's concern, a memorandum has been prepared by the City's Transportation and Parking Manager. It is included in the following pages and the Project Description has been modified as recommended.

C I T Y   O F   S A N T A   B A R B A R A

INTER-OFFICE MEMO

DATE: December 13, 1990 **DEPARTMENT OF:** Public Works

TO: Mitch Oshinsky, Environmental Analyst

FROM: George Gerth, Transportation and Parking Manager

SUBJECT: REVIEW OF POTENTIAL CONSTRUCTION RELATED TRANSPORTATION IMPACTS OF IONICS DESALINATION PROJECT

As requested, I have reviewed the information you have supplied regarding the construction work force estimates and construction schedule of this Project. The intent of this review was to determine if, in my opinion, it is likely that there will be substantial, reoccurring, construction related travel, during the peak hours and through intersections which exceed our level of service standards.

Assumptions used for this review are:

- The Project capacity is 10,000 acre-feet per year.
- The seawater intake line is to be inserted into the abandoned sewer outfall avoiding any street cuts.
- The Yanonali bridge is complete in October 1991.
- Caltrans crosstown project remains on its current schedule with the Garden Street undercrossing open to traffic in December 1991.
- State Street Mission Creek bridge is complete in August 1991.
- The Project construction starts on July 1, 1991.

As you know, a precise analysis of construction related traffic impacts would be extremely difficult to do because Project construction begins before the crosstown freeway project is complete. Various elements of the freeway are being completed as the construction activity for this Project increases. The City's traffic model is not calibrated to respond to the interim freeway conditions and therefore a precise distribution of existing traffic using the street system is not possible. Without this information it is not possible to know which intersections, if any, will exceed our standards during the construction phase; and therefore where construction traffic will pose a concern.

Because of these difficulties, I have approached this task relying heavily upon engineering judgment as a basis for analysis. The possibility of construction impacts of this project are directly related to five factors;

- the time of year for Project construction
- the completion of street improvements during Project Construction
- the reduction of other construction activity in the area
- the control of Project construction employee commute patterns

- the control of Project material delivery methods and schedules

In reviewing these factors I have concluded that, in my opinion, it is very unlikely that there will be Project construction related traffic impacts. This conclusion is based upon the following.

The Project uses a relatively small work force, spread out over several work sites. Commute and construction traffic will be somewhat dispersed. The total work force is not constant throughout the entire construction period but rises and falls over time. When the peak work force is present, it is off season for tourist traffic, the State Street undercrossing is open, adjunct City street improvements are complete and the crosstown freeway work force is decreased. It is only during the months of August and September (1991), during the tourist season, that construction activity may be using intersections which exceed our standards. This is a short period of time and even that possible impact is speculative because the State Street undercrossing will be complete thereby improving traffic conditions in the area. During the tourist season in 1992, the crosstown freeway work force has been reduced more than the total Project work force present at that time. These relationships are illustrated on the attached matrix.

Further assurance of avoiding Project related traffic impacts can be obtained by amending the Project description to include the requirement that a Project Transportation Management Plan be prepared and implemented for the construction phase. This plan would require shifting or reducing the number of work force commute trips occurring during the peak periods as well as scheduling the delivery of construction materials to occur out of the peak periods. Since the Southern Pacific Railroad is so close to the Project site, it is also recommended that the possible delivery of construction materials by rail be explored and implemented, if found to be feasible.

GG/ym

cc: Bruce Burnworth, City Engineer/Asst. Director

Attachment: Activity Matrix

[E:GGDESAL.MEM]

IONICS DESAL CONSTRUCTION ACTIVITY COMPAIRED TO OTHER STREET ACTIVITY

Time:	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Year	1991							1992						
Desal Workforce	0	20	56	58	60	65	60	44	40	23	28	28	5	12
Desal truck Traffic	0	5	5	8	9	9	8	6	2	2	4	2	4	2
Crosstown Workforce	80	80	60	60	60	60	60	40	40	40	40	40	40	0
Crosstown Status	< Yanonali off-ramp closed	< State St. undercrossing open						< Garden St. interchange open						
City Street Status					< Yanonali Bridge open									
Waterfront Travel demand	< High season			>< Low season							>< High Season			

APPENDIX D

CITY OF SANTA BARBARA,
COUNCIL AGENDA REPORT

This appendix includes the City Council Agenda Report (August 3, 1990) from the Alternative Water Supply Proposal Review Panel regarding "Selection of a Preferred Alternative Water Supply."

CITY OF SANTA BARBARA

COUNCIL AGENDA REPORT

REPORT DATE: August 3, 1990

TO: Mayor and Councilmembers

FROM: Alternative Water Supply Proposal Review Panel

SUBJECT: SELECTION OF A PREFERRED ALTERNATIVE WATER SUPPLY PROJECT

RECOMMENDATION:

That Council:

A. Accept the Panel's recommendation that the Ionics, Inc. proposal is the preferred desalination project;

B. Accept the Panel's conclusions regarding tankering options and the Panel's action, in response to Council's direction, identifying Sun Belt Water, Inc., the lowest price tankering proposal, as the firm with which to enter negotiations should the Council prefer a tankering option, subject to the concerns and considerations outlined in this report;

Recommendations continued on Page 2.

Discussion: See Page 2.

Attachments: Attachment A - Draft Water Supply and Revenue Plan
Attachment B - Desalination Evaluation of Issues
Attachment C - Tankering Evaluation of Issues
Attachment D - Summary Financial Information
Attachment E - Cost Comparison of Proposals
Attachment F - Resolution

REVIEWED BY: ______Finance ______Attorney ______________

STAFF USE ONLY

TO:

FROM: City Administrator

ACTION TAKEN:

DIRECTIONS:

Meeting Date AUG 7 1990

Agenda Item No. 33

RECOMMENDATIONS: (Continued)

C. Accept the Panel's recommendation that the Ionics, Inc. proposal represents the best temporary emergency alternative water supply project;

D. Adopt, by reading of title only, "A Resolution of the Council of the City of Santa Barbara Waiving the Provisions of Charter Section 519 Relating to Public Works Contracts"; and

E. Direct staff to negotiate a final contract with Ionics, Inc. for the delivery of water to the City of Santa Barbara, and to return to Council for execution of the contract on September 11, 1990.

DISCUSSION:

INTRODUCTION

On February 27, 1990, City Council declared a Stage III Drought condition based on a projected water deficit of 47% for water year 1990-91. On May 15, 1990, City Council declared a local emergency based on the current and possibly continuing drought. On July 17, 1990, Governor George Deukmejian also issued a Proclamation of State Emergency on the finding of extreme water shortage within the City of Santa Barbara. In response to the Stage III drought condition, City Council directed City staff to secure emergency water supplies from increased groundwater pumping, temporary State water and expanded use of reclaimed water. Additionally, on March 13, 1990, City Council directed staff to solicit proposals from private firms for delivery of water in amounts between 2,500 AFY and 5,000 AFY no later than September 1991. The City set the goal of developing reliable, temporary emergency supplies to replace the potential loss of water deliveries from Cachuma Reservoir beginning in the 1992-93 water year. Supplemental water supplies will also replenish groundwater basins which are being overdrafted on an emergency basis. Since March 1990 several emergency

Discussion continued on Page 3.

DISCUSSION: (Continued)

supply projects have moved from project identification and feasibility study into implementation. See Attachment A. This report describes the process used for proposal review and evaluation of desalination by reverse osmosis and distillation and of tankering of Canadian fresh water and presents recommendations.

The proposals furnish plans and costs for providing up to 10,000 acre feet of water per year for up to five years. They also furnish information as to the cost for continuing water deliveries beyond five years. While the City has looked to meeting a 5,000 acre feet per year delivery requirement, information was sought on a potentially larger project in response to the possibility that other water agencies may wish to purchase emergency water supplies as well. To date both the Montecito Water District and the Summerland Water District have expressed interest in potentially participating in either a desalination or tankering project to meet emergency needs during the current drought.

The short listed proponents which responded to the request for the second submittal package include:

Tankering:	Desalination:
Western Canada Water	Ionics, Inc.
Sunbelt Water	Ambient Technologies, Inc.
Aqua Source with SCI	Aqua Design

The Alternative Water Supply Proposal Review Panel recommends that the City Council authorize negotiation with Ionics for a contract to deliver desalinated water.

Discussion continued on Page 4.

DISCUSSION: (Continued)

PROPOSAL PROCESS

The following chronology reviews the process leading to the Panel recommendations included in this report:

March 13, 1990	Council authorized preparation of an request for proposal (RFP) to solicit proposals from anyone who could provide the City with up to 5,000 acre feet per year of water.
April 2, 1990	RFP was distributed to some 200 interested parties.
May 4, 1990	Responses were received from 42 firms and individuals.
May 4-16, 1990	Panel analyzed 26 proposals that were complete enough to review. Proposals were grouped into five categories (Tankered Water, Distillation, Wastewater Treatment, Groundwater Wells, Reverse Osmosis).
May 22, 1990	Panel recommended that Council short-list five reverse osmosis desalination firms.
May 29, 1990	Council approved a short list that included the five reverse osmosis and three tankering firms.
June 12, 1990	Council added a distillation project to short list.
June 14 & 15, 1990	Panel interviewed short listed firms.
July 3, 1990	Council authorized distribution of second submittal packages to the short listed firms (distributed July 5, 1990).

Discussion continued on Page 5.

DISCUSSION: (Continued)

July 17, 1990	Staff distributed responses to proposers' requests for information.
July 24, 1990	Panel received proposals from three desalination firms (Ambient Technologies, Ionics, Aqua Design) and three tankering firms (Aqua Source, Sunbelt Water, Western Canada Water).
July 28 - August 2, 1990	Panel held five public meetings including: Presentations by Consultants Interviews of Proposers Analysis of Proposals Formulation of Recommendations

The Alternative Water Supply Proposal Review Panel included the following:

Voting Members

Councilmember Jeanne Graffy
Water Commissioner Charles Meyer
Deputy City Administrator Sandra Lizarraga
Assistant City Attorney Kathleen Weinheimer
Assistant Finance Director Mark Paul
Regional Issues Analyst Dale Brown
Principal Planner Mitch Oshinsky
Assistant Director/City Engineer Bruce Burnworth
Chief of Building & Zoning Roy Harthorn (did not attend)

Consultants

Howard Wilson - CH2M Hill (Water Systems)
Dean Bedford - CH2M Hill (Desalination)
Bob Brandenburger (Marine)
Robert Ray - Woodward Clyde Consultants (Permitting)
John Davis - EIP (Environmental)

Discussion continued on Page 6.

DISCUSSION: (Continued)

Observers

Deputy Director of Energy Division (S.B. County) Rob Almy
ERC Representative Tom Gerig
ERC Representative Betsy Thies (Alternate)
General Mgr.-Goleta Water District Robert Paul (did not attend)

The Panel members and consultants worked over 600 hours in analyzing the proposals and developing recommendations during a ten-day period. The Panel met for more than 23 hours during five public meetings. The Panel also recognizes the tremendous efforts made by the proposers to prepare the proposals and respond to the Panel's requests for additional information and clarification.

PROJECT DESCRIPTIONS

The following are brief descriptions of each of the projects:

Ionics, Inc.

Ionics, Inc. proposes to draw seawater from under the end of the wharf from submerged pumps into a pipeline that would be attached to the wharf. The pipeline would be buried from the end of the wharf to the City's vacant land on Yanonali Street (next to the Rescue Mission). This intake was selected due to minimum permitting requirements and the unknown condition of the City's abandoned sewer outfall. Ionics, Inc. will consider the abandoned outfall as an intake if it is useable.

The seawater will be pretreated with a two-stage filtration process and the addition of filtration aids, disinfectants and pH adjustments.

The water will then be pumped at high pressures through spiral wound reverse osmosis membranes. Energy will be recovered from the brine water through a turbine.

The brine solution will be piped to the sewer outfall and discharged into the ocean with the treated water from the sewage treatment plant.

Discussion continued on Page 7.

DISCUSSION: (Continued)

The product water will be treated to make the water non-aggressive (non-corrosive) to the mineral deposits on existing City water pipes. The finished water will be pumped into the Yanonali Street water main at a pressure that will allow water not used in that area of the City to be stored in City Reservoir 1. At the higher volume options water would be pumped from Reservoir 1 to Sheffield Reservoir for gravity distribution to other parts of the City or other South Coast Water Purveyors.

The pretreatment and reverse osmosis equipment will be placed in trailers/containers on the site. A stucco wall along Yanonali Street and landscaping will be provided.

Aqua Design

Aqua Design proposes to draw seawater from an intake structure attached to the City's abandoned sewer outfall 1,200 feet from shore. Seawater would be piped through the abandoned sewer outfall to the City's sewage treatment plant. A new pipeline would carry the seawater to the City's vacant land on Yanonali Street (next to the Rescue Mission).

The seawater will be pretreated with a two-stage filtration process and the addition of filtration aids and pH adjustments.

The water will then be pumped at high pressure through spiral wound reverse osmosis membranes. Energy will be recovered from the brine water through a turbine.

The brine solution will be piped to the sewer outfall and discharged into the ocean with the treated water from the sewage treatment plant.

The product water will be treated to make the water non-aggressive (non-corrosive) to the mineral deposits on existing City water pipes. The finished water will be pumped into the Yanonali Street water main at a pressure that will allow water not used in that area of the City to be stored in City Reservoir 1. At the higher volume options water would be pumped from Reservoir 1 to Sheffield Reservoir for gravity distribution to other parts of the City or other South Coast Water Purveyors.

Discussion continued on Page 8.

DISCUSSION: (Continued)

The pretreatment canisters would be located in the open. All reverse osmosis equipment would be placed in a metal building. A stucco wall would be provided along Yanonali Street.

Ambient Technologies, Inc.

Ambient Technologies, Inc. proposes to draw seawater from approximately 1,200 feet beyond the end of Stearns Wharf. The seawater would be clarified in a 50' x 50' x 50' high concrete structure at the end of Stearns Wharf and pumped along the wharf in a pipeline. A buried pipeline would take the water to the City's vacant land on Yanonali Street (next to the Rescue Mission).

An antiscalant will be added to the water before it is distilled in Mechanical Vapor Compression (MVC) units. The pressure of the water is lowered mechanically, vaporized at a low temperature, then condensed into distilled water.

The brine solution will be piped to the sewer outfall and discharged into the ocean with the treated water from the sewage treatment plant.

The product water will be treated to make the water non-aggressive (non-corrosive) to mineral deposits on existing City water pipes. The finished water will be pumped into the Yanonali Street water main at a pressure that will allow water not used in that area of the City to be stored in City Reservoir 1. At the higher volume options water would be pumped from Reservoir 1 to Sheffield Reservoir for gravity distribution to other parts of the City or other South Coast Water Purveyors.

The 33 feet high MVC units would be inside two screen walls. The first screen wall would be 8-feet tall and the second 25-feet tall. The stucco screen walls would have arches. Landscaping would be provided.

Discussion continued on Page 9.

DISCUSSION: (Continued)

Western Canada Water

Western Canada Water proposes to load glacial water from Link Lake, Ocean Falls, British Columbia into a tanker ship via a new mooring system. The tanker ship would bring the water to a new mooring system either near Ellwood Pier or Schulte Ranch in Goleta. The water would be pumped 1 to 1-1/2 miles through an ocean bottom pipeline to a pump station onshore.

Once the water is onshore the water would be pumped either to the Schulte Ranch Reservoir or to Glen Annie Reservoir via either an above ground or below ground pipeline. For the Schulte Ranch route the water would be pumped into the Goleta West Conduit (Goleta Water District) then into the South Coast Conduit (Bureau of Reclamation). The water would have to be buffered prior to entering either of these pipelines in order to prevent corrosion of the pipelines.

From the South Coast Conduit the water would be treated in the City's Cater Water Treatment Plant for distribution throughout the City.

Sunbelt Water, Inc.

Sunbelt Water, Inc. proposes to load glacial water from Tzela Creek located approximately 100 miles northwest of Vancouver, British Columbia into a tanker ship via a new mooring system. The tanker ship would bring the water to a new mooring system either near Coal Oil Point or Schulte Ranch in Goleta. The water would be pumped 1 to 1-1/2 miles through an ocean bottom pipeline to a pump on shore.

Once the water is on shore, the water would be pumped either to the Schulte Ranch Reservoir or to Glen Annie Reservoir via a below ground pipeline. For the Schulte Ranch route, the water would be pumped into the Goleta Water Conduit (Goleta Water District) then into the South Coast Conduit (Bureau of Reclamation). The water would have to be buffered prior to entering either of these pipelines in order to prevent corrosion of the pipelines.

From the South Coast Conduit the water would be treated in the City's Cater Water Treatment Plant for distribution throughout the City.

Discussion continued on Page 10.

DISCUSSION: (Continued)

AquaSource/SCI Contractors, Inc.

AquaSource proposes to load glacial water from Freil Lake located north of Vancouver, British Columbia into a tanker ship, via a new mooring system. The tanker ship would bring the water to a new mooring system either near Ellwood Pier or Schulte Ranch in Goleta. The water would be pumped 1 to 1-1/2 miles through an ocean bottom pipeline to a pump station on shore.

Once the water is on shore, the water would be pumped either to the Schulte Ranch Reservoir or to Glen Annie Reservoir via either an above ground or a below ground pipeline. For the Schulte Ranch route, the water would be pumped into the Goleta Water Conduit (Goleta Water District) then into the South Coast Conduit (Bureau of Reclamation). The water would have to be buffered prior to entering either of these pipelines in order to prevent corrosion of the pipelines.

From the South Coast Conduit the water would be treated in the City's Cater Water Treatment Plant for distribution throughout the City.

PRELIMINARY REGULATORY RECONNAISSANCE AND ENVIRONMENTAL REVIEW PROCESS

The consultant team of Woodward-Clyde and EIP, working with City Staff, have completed a Phase I - Technical Report, Regulatory Reconnaissance and Preliminary Environmental Analysis for the Emergency Water Supply Project, Desalination and Water Tankering Options. The primary objective of this Report was to evaluate regulatory permits and approvals that would likely be required for the projects which were considered by the Alternative Water Supply Panel, and to perform a preliminary assessment of potential environmental impacts and concerns associated with the various projects. This Report does not constitute a formal Initial Environmental Study in accordance with the California Environmental Quality Act (CEQA), and it is only based on preliminary project information. However the value of this Report lies in its early identification of the complex permitting process, and an early understanding of major environmental issues. The information contained in this Report, and the early contacts made with affected

Discussion continued on Page 11.

DISCUSSION: (Continued)

local, State and Federal agencies will help expedite the permitting and environmental review process. The early understanding of environmental issues will help in the development of a project which will either avoid impacts, or attempt to incorporate mitigations into the design of the project itself.

Implementation of either a desalination or tankering proposal would require environmental review, permits and approvals from various Federal, State and local agencies. The Report identifies all responsible agencies, required permits, time frames and agency contacts. Some of the responsible agencies are:

- U.S. Army Corps of Engineers
- California Coastal Commission
- State Lands Commission
- California Department of Fish and Game
- State Water Resources Board, Regional Water Quality Control Board
- Air Pollution Control District

It is estimated that the CEQA environmental review process would take about 8 months to complete on a fast-track schedule. If National Environmental Policy Act (NEPA) compliance is necessary, the schedule may expand by up to 4 additional months. Assuming the cooperation of permitting agencies, it is currently expected that it would be possible to obtain all final permit approvals within 1 to 2 months following issuance of the final environmental document.

None of the desalination or tankering proposals studied appear to involve environmental impacts so severe that they would threaten the feasibility of the project. Any desalination or tankering proposal would require substantial energy, and any ocean facilities must be sensitively sited to avoid potential impacts on marine life. All of the tankering proposals have the potential to generate significant negative impacts on air quality, for which offsets may or may not be available. However, it is the conclusion of the Phase I Report that other impacts as currently envisioned, will be insignificant or can be mitigated.

Discussion continued on Page 12.

DISCUSSION: (Continued)

At a water worksession held on June 8, 1990, the City Environmental Review Committee (ERC) requested that the City make every effort to allow public input regarding the desalination and tankering proposals. In response to that request, the ERC conducted an optional Early Public Consultation Hearing, pursuant to CEQA, on July 6, 1990. The purpose of the hearing was to present the draft Phase I Report to the public and the ERC, and to invite their comments on the Report.

The Report has been finalized and was considered by the Alternative Water Panel in arriving at their recommendation to Council. The Report is available for Council and public review. Representatives from Woodward-Clyde and EIP will be at the Council meeting on August 7th to provide an oral presentation on the Report, and to respond to questions.

ANALYSIS

During their analysis the Panel thoroughly considered the proposals, the consultants' presentations regarding their specific areas of expertise, interviews of the proposers, comments from Panel members and observers, and written responses submitted prior to the Panel's voting on its recommendations to Council.

A summary of the Panel's analysis is included in Attachment B (Desalination) and Attachment C (Tankering). The Panel identified eight main issue areas. Each issue area is divided into sub-issues for analysis. The issue areas are the same for both Desalination and Tankering with the exception of the addition of issues in Canada for the tankering alternatives.

Each item was assigned a relative rating or a numeric value. The following rating system was used:

G - Good: Assigned to proposals with specific strengths or advantages related to an item.

S - Satisfactory: Assigned to proposals for items which are adequate or would not pose a substantial problem or concern

Discussion continued on Page 13.

DISCUSSION: (Continued)

P - Poor: Assigned to proposals when an item raised significant concerns which may make the project difficult to permit or otherwise undesirable relative to the other proposals.

U - Unknown: Assigned to proposals when either the proposer did not supply sufficient information to analyze or Staff did not have sufficient background information to evaluate the item.

NR - Non Responsive: The proposal did not respond to an item requested in the RFP.

The following is a discussion of the eight issue areas for Desalination and Tankering. More discussion is provided when a particular proposal has significant advantages or disadvantages.

Evaluation of Issues: Desalination

1. Overall System Design

Completeness:

Both Ionics and Ambient Technologies submitted complete, well developed proposals that were responsive to the RFP. Aqua Design's proposal had a number of areas that were not complete and other areas that showed little research, analysis and/or detail.

Reliability:

All three proposals included designs that could reliably deliver water to the City. Each system's water intake structure would be susceptible to disruption for short periods during severe storms.

Flexibility:

Ionics exhibited an exceptional flexibility with regard to designing the system to address the concerns that may be raised as the environmental and permitting process proceeds. Aqua Design and Ambient Technologies indicated they would design their facilities and then change the design if needed to address concerns.

Discussion continued on Page 14.

DISCUSSION: (Continued)

Feasibility:

Each design is based on water system designs that the firm has successfully implemented in other locations.

2. Facility Construction/Equipment Acquisition

Local: Schedule & Existing/New

Each firm can meet the proposed schedule and each proposes to use a combination of existing City facilities and new facilities to be built by the proposer.

Long Lead Time

The Panel was particularly concerned about long lead time items that may affect the City's ability to modify the project schedule. The initial items for the two reverse osmosis proposals are the high pressure pump and energy recovery turbine units. These units need to be ordered eight months in advance of the water delivery date but may be cancelled at a relatively low cost. The Ambient Technologies' units must be ordered 10 months in advance of the water delivery date and are subject to a 30% cancellation fee. This would represent a significant cost.

3. Cost

At the 5,000 acre feet level initial per acre foot costs for Aqua Design, Ambient, and Ionics were $1,838, $2,390, and $1,953, respectively. With the evaluation of the second five year period, the costs for Aqua Design, Ambient, and Ionics were $1,097, $957, and $949, respectively. The initial long-term standby costs for Aqua Design, Ambient, and Ionics were $1,114, $1,720, and $1,175, respectively. See Attachment E - Cost Comparison of Proposals.

Discussion continued on Page 15.

DISCUSSION: (Continued)

4. Reliability of Firm

Financial Strength and Bonding Capability

Bonding ability was specifically requested in the second proposal. Aqua Design did not provide information until this week. Aqua Design is a privately held company whose financial records are not open for review. Ionics, Inc. is a large corporation with sales last year in excess of $100 million. They provided information indicating their ability to be bonded. Ambient Technologies, Inc is a subsidiary of Israel Desalination Engineering, a large corporation in Israel. Ambient, a subsidiary of IDE, provided a strong financial backing for the project, along with the ability to be bonded. See Attachment D - Summary Financial Information.

Experience with Proposed System

Reference checks revealed that each firm has successfully implemented a similar system in other locations.

Project Team

Ionics' proposal included an exceptionally strong project team. Ionics' staff has built and operated numerous water treatment facilities around the United States. They have designed, built and operated a similarly sized direct sea intake reverse osmosis system in the Grand Canary Islands. Ionics' team also includes Bardex (Goleta) who originally submitted a strong proposal and later withdrew due to difficulties in obtaining required bonding. Bardex's staff was in charge of design and construction of the reverse osmosis facilities at Chevron and Diablo Canyon. Ionics' team also included respected local design consultants and construction contractors.

The other two firms had satisfactory project teams that could successfully implement the project.

Discussion continued on Page 16.

DISCUSSION: (Continued)

5. Flexibility

Variable Water Production

Desalination projects as modular treatment facilities are suited to variable production levels and can be sized up to higher production capacities with approximately 6 - 10 months lead time and can reduce water production with reduced cost. That all the desalination projects can be taken off line and put on stand by with significantly reduced costs is a positive attribute of desalination. Both Ionics and Ambient were deemed good in that they can produce up to 10,000 AFY on the sites offered by the City. Aqua Design declined to submit a 10,000 AFY project and was rated satisfactory by comparison.

Cost of Change

All proposals were rated satisfactory in that the incremental costs for sizing up were comparable and the costs for standing down also were comparable and reasonable.

Regional Application

Both Ionics and Ambient were found acceptable on this criterion in that they can be sized to deliver up to 10,000 AFY on the provided sites. However, Aqua Design limited their production capacity to 7,500 AFY therefore making it a poorer proposal for meeting the potential production needs of a regional project.

Temporary

Both Aqua Design and Ionics by design are good temporary projects in that the equipment is containerized or skid mounted and can be easily removed and transferred to another project or location. Ambient's project is designed for a 30 year useful life and includes a double wall surrounding the facility and more extensive foundations. Nevertheless, Ambient's proposal was found satisfactory on this issue in that the treatment vessels could be removed.

Discussion continued on Page 17.

DISCUSSION: (Continued)

Long Term

As explained in the section above, Ambient's proposal has a stronger long term application while the equipment and appurtenant facilities of both Ionics and Aqua Design are designed for a 20 year life.

6. Environmental

Chemical Use and Storage

Reverse osmosis (RO) desalination uses chemicals primarily for pretreatment, antiscalant, disinfection and product water buffering. Distillation desalination uses chemicals for descaling, disinfection and product water buffering. Most chemical storage is proposed to be at the El Estero WWTP. Hazardous or aggressive chemicals will be stored in containment areas and in compliance with all applicable code requirements. The most hazardous chemical used for desalination would be chlorine (used by all 3 proposers). All proposers were rated satisfactory in this area.

Product Water Quality

All the proposers would provide water of very high quality. All would be low in salinity and hardness, with Ambient having the lowest levels. All proposers were rated good in this area. Existing City water is considerably harder than water from desalination. In order to avoid damage to City pipes and potential health hazards from corrosion, the desalination water must be buffered.

Air Quality

Desalination, as a means of producing water, is more energy intensive than the City's other sources of water. However, existing sources of electrical power have adequate capacity to supply any of the desalination proposals. During the temporary life of this facility no new power sources are likely to be necessary, therefore avoiding major generation of new air pollution.

Discussion continued on Page 18.

DISCUSSION: (Continued)

Marine Life and Aquatic Biology

Any ocean facilities have the potential to have effects in this category. Areas of concern relate to seawater intake structures, pipelines on the ocean floor and waste brine discharge. The Ambient proposal has a significantly larger intake-related structure (the caisson/clarifier) and significantly more ocean floor pipeline than the other proposers. These facilities would affect areas which have not yet been fully studied, therefore Ambient was rated unknown in this category.

Sensitive Habitat Onshore

Ionics' proposal has their seawater intake pipeline coming in from the wharf, then paralleling Cabrillo Boulevard, and finally turning up to the desalination plant site. There are two areas on this route which may contain sensitive habitats, however it may be possible to avoid those areas. Therefore Ionics was rated unknown in this category. The two other proposals' onshore pipeline routes would follow the abandoned outfall and completely avoid any sensitive areas. They were rated good.

Noise

The RO plants will have high pressure pumps which will generate high noise levels on the plant site. The distillation plant will emit lower noise levels, but they may still be at a level of some concern. All intake facilities require low pressure pumps, which will generate noise, but at lower levels than the high pressure RO pumps. It should be possible to mitigate all these noise levels to acceptable standards.

Aesthetics

This is a subjective category, however all the proposals have attempted to mitigate aesthetic concerns. The site is zoned Ocean Oriented Manufacturing, and abuts the WWTP which has an industrial appearance. The aesthetic character of the area is also affected by the Spanish stucco and tile of

Discussion continued on Page 19.

DISCUSSION: (Continued)

the nearby Rescue Mission. The plant site is prominent in that it is visible from the freeway and foothills. The Ambient proposal was rated poor because their tank elements, which are significantly higher than the RO facilities, were not totally screened from public view. Another significant aesthetic concern was the Ambient caisson topped by a pumphouse, which would detract from the character of the wharf and diminish ocean views.

Archaeology

Both the Ionics and Ambient pipelines would cross areas which may contain significant cultural resources, either on- or offshore. As specific studies have not been done along these pipeline routes, both proposers were rated unknown as to effects.

Energy Consumption

While desalination in general is high in energy consumption compared to the City's other existing water sources, distillation is up to 50% more energy intensive than RO. Therefore, based on their energy consumption figures, Ambient was rated poor.

Short Term Construction Impacts

Due to their pipeline on the wharf, the short term impacts of the Ionics proposal were rated poor. Any such large pipe on the wharf has the potential to impact wharf access. The large caisson proposed by Ambient to be located at the end of the wharf has similar potential for impacts and was also rated poor.

Risk of Upset

This category concerns the possibility of an incident which might result in a chemical spill, or the potential of damage to any of the intakes from a severe storm or collision by a ship. All proposals were rated satisfactory because they will have to comply with all safety rules and regulations for chemical storage and structural design; and any intake damage would only result in a temporary interruption of service.

Discussion continued on Page 20.

DISCUSSION: (Continued)

Recreation

The Ambient proposal was rated poor due to the negative effects of the caisson on fishing/recreation at the end of the wharf.

7. Third Party Agreements

The only third party agreements required for each of the firms is an agreement with Southern California Edison (SCE). SCE states that facilities are in place in Yanonali Street and that sufficient power exists in their power grid for any of the desalination proposals.

8. Permitting and Licensing

Local

All proposals were rated equally good in terms of being able to expeditiously obtain local permits for coastal development, building, grading, public works, fire and health services.

State

There were concerns with State Coastal Commission approval for Ionics' intake, being located under the wharf where it might be subject to storm damage. Ambient's caisson was a source of even greater concern due to the potential impact on the visitor serving nature of the wharf and the greatest potential for impacts on the sea bottom related to trenching for the caisson and the long, angular extent of the underwater pipeline.

Federal

Due to very small impact on the sea, both Ionics and Aqua Design received a rating of good. Ambient was downgraded as mentioned above, because of their significant seafloor presence.

Discussion continued on Page 21.

DISCUSSION: (Continued)

Evaluation of Issues: Tankering

1. Overall System Design

Completeness

All three firms indicated they could use either the Schulte Ranch Reservoir or the Glen Annie Reservoir route for delivery of water to the South Coast Conduit and then into the City's Cater Water Treatment Plant. The specific route to be used remains undefined.

Both Western Canada Water and AquaSource had fairly complete proposals that were easy to follow and understand.

The proposal from Sun Belt Water was quite difficult to follow and not as cohesive or detailed as the other two proposals.

Reliability

All three designs could reliably provide water to the City. Loading, shipping, and unloading would all be susceptible to disruption for short periods during severe storms.

Flexibility

All three firms indicated willingness to modify their designs in order to address concerns raised during environmental review and permitting. This is evidenced by their flexibility in changing their onshore pipe routing to Glen Annie Reservoir. Sun Belt Water, Inc. had initially indicated a preference to use the Glen Annie Reservoir route and had an option to use the Schulte route.

Feasibility

All three systems can be designed to deliver water to Santa Barbara. The system as a whole has not been implemented before in the scale being proposed.

Discussion continued on Page 22.

DISCUSSION: (Continued)

2. Facility Construction/Equipment Acquisition

Local: Schedule and Existing/New

All three firms can implement either of the two off-loading approaches to meet the proposed schedule.

Canadian: Schedule and Existing/New

Western Canada Water and Sun Belt Water have some facilities in Canada that would need to be expanded to deliver large amounts of water. AquaSource has no facilities at their water source.

Long Lead Time

Each of the firms is considering either obtaining a new ship or cleaning an oil tanker to carry water. Cleaning and retrofitting an oil tanker would cost $10 to $12 million and take 6-8 months. Once the cleaning process begins significant costs would be associated with cancellation. Obtaining a new ship would depend on availability of ships coming off the production line. The purchase price of a new tanker would be in the $90 million range.

3. Cost

At the 5,000 acre feet level initial per acre foot costs for Western Canada, Sunbelt, and AquaSource were $4,269, $3,195, and $4,912, respectively. With the evaluation of the second five year period, the costs for Western Canada, Sun Belt Water, and Aqua Source were $2,825, $2,022, and $3,554, respectively. The initial long-term standby costs for Western Canada, Sunbelt, and Aqua Source were $3,261, $3,116, and $3,153, respectively. See Attachment E - Cost Comparison of Proposals.

Discussion continued on Page 23.

DISCUSSION: (Continued)

4. Reliability of Firm

Financial Strength and Bonding

Tankering was more difficult to evaluate due to the unproven track record of any of the proposers to deliver water. Aqua Source was the strongest from a financial position due to their partnership with SCI, Inc, which is bonded for $225 million. Western Canada Water financial statements, which were obtained from outside sources show net worth of $4,796,032. Due to the larger size of this contract it was felt that this project would have a major impact on this company. Sun Belt Water, Inc. is a formulating company with equity partners including Snowcap Water, Bank of America, JM Montgomery Consulting Engineers, and Teekay Shipping. Neither Western Canada Water, nor Sun Belt have been bonded before. Bonding would not be able to take place until the City more clearly defines its needs and is further along in the process. In financial strength, AquaSource was considered the best. See Attachment D - Summary Financial Information.

Experience with Proposed System

None of the firms have implemented a similar system to deliver water.

Project Team

Each firm includes various team members that could work together to implement the proposed system. None of the teams have worked together to implement a project of this magnitude. The shipping members of each team have significant experience in tankering oil and other products.

Discussion continued on Page 24.

DISCUSSION: (Continued)

5. <u>Flexibility</u>

<u>Variable Water Production</u>

Each of the tankering projects can increase their deliveries with very little constraint on the likely upper limits. However this can involve securing an additional vessel with 6 - 8 months lead time prior to delivery, with a 90-day cancellation penalty clause amounting to the significant costs of securing or purchasing a vessel. The tankering proposals are less flexible as to reducing or varying deliveries. The costs of "standing down" are so high that it would be more economical to take the full amount of water whether it is needed or not. All were rated as satisfactory because while they have the ability to deliver much more than 5,000 AFY, reducing deliveries is impractical from a cost standpoint.

<u>Cost of Change</u>

As explained above, the cost consequence of securing additional vessels or of "standing down" are high and therefore all proposals were rated poor.

<u>Regional Application</u>

Tankering proponents advocate regional application because tankering becomes more cost effective at 10,000 AFY to 15,000 AFY.

<u>Temporary</u>

All proposals can provide temporary projects by virtue of a time-limited contract and a requirement that mooring and other onshore facilities be removed. Proponents disagreed with the wisdom of removing facilities, and Western Canada Water proposed to not remove anything.

<u>Long Term Potential</u>

The onshore facilities are expected to have a 20 year life and water delivery contracts can be extended.

Discussion continued on Page 25.

DISCUSSION: (Continued)

6. Environmental

Based on the information available at this time for the individual proposals, the three tankering proposals were similar with regard to environmental concerns.

Chemical use and Storage

All of the tankering projects would at a minimum have to provide for chlorination of the water prior to transportation. In addition, other chemicals will need to be added to the water to reduce its aggressiveness to the local water distribution systems. Facilities for the use of such chemicals would either be at the loading facilities in Canada, on board the tanker, or onshore in Santa Barbara County. Any such facilities in Santa Barbara County would be required to meet all regulatory requirements regarding safe storage, handling and disposal procedures which would provide adequate environmental protection for the use of these chemicals.

Product Water Quality

The Canadian water sources proposed by the tankering proponents all would provide water of excellent quality, being extremely low in total dissolved solids. However, because the water would be very pure, it could be highly aggressive (corrosive) in the region's water distribution system, which normally carries relatively hard water. The pure, tankered water could dissolve the scale which currently exists inside the distribution pipes. Not only would this be undesirable for the water customers, but it also could expose the pipes to greater corrosion. Treatment or adequate blending (if water is available from Lake Cachuma) of the Canadian water before introduction into the South Coast water system would solve this problem.

Discussion continued on Page 26.

DISCUSSION: (Continued)

Air Quality

Based on a preliminary analysis by the Santa Barbara County Air Pollution Control District, the tankering projects potentially could result in large increases in air emissions in the South Coast region. Emissions would include nitrogen oxides (NO_x) and oxides of sulfur (SO_x) from fossil fuel combustion for the tanker's engine and other power requirements while the tanker is traveling in the Santa Barbara Channel and while berthed at the unloading facility. In addition, service vessel traffic and unloading pumps also could result in increased air emissions. Detailed analyses of air quality impacts cannot be done until specific locations are identified for the offshore mooring; tanker size, propulsion systems, and emission control equipment are identified; and pumping requirements are clarified. NO_x emissions are ozone precursors which could contribute to increased regional ozone concentrations. The South Coast region is in violation of state and federal ozone standards. SO_x emissions could result in localized air quality standard violations. Potential mitigation would include the use of Best Available Control Technology (BACT) or reductions of emissions from other sources (offsets), if available.

Marine Life and Aquatic Biology

Potential impacts to marine life and aquatic biology from a tankering project could result from the installation of offshore pipelines and the single point mooring and from tankering operations in the Channel. All three proposals suggested mooring locations between Coal Oil Point and Naples. Since none of the proponents identified a specific mooring location and all indicated flexibility in siting the mooring, it is not possible to assess these impacts at this time. The proposals are all similar in terms of the suggested distance of the mooring from shore and thus the approximate length of offshore pipeline required. Tanker operations would be similar among the three proposals.

Discussion continued on Page 27.

DISCUSSION: (Continued)

Sensitive Habitat Onshore

Impacts to sensitive onshore habitats would occur if the onshore pipelines cross riparian areas, wetlands, or other habitats identified as environmentally sensitive by Santa Barbara County. All of the proposals would involve at least several miles of onshore pipeline. Because the onshore pipeline routes were not specifically identified and the proposers indicated flexibility with regard to the onshore unloading facilities, it is not known what sensitive onshore areas might be affected. However, it would be expected that such areas could be identified during the design and environmental review of the project and could be avoided through route adjustments.

Noise

The tankering proposals all require the operation of tankers and the use of unloading pumps on the ship and/or on shore. Noise generated by or on the tanker will not be audible on shore, due to its distance (1 to 1.5 miles) from shore. Onshore pumps could cause noise impacts depending on their location relative to other land uses. The location of the onshore facilities is uncertain at this time. However, noise impacts could be mitigated with the use of sound attenuation materials.

Aesthetics

Aesthetic impacts of the tankering projects would include the presence of the tanker and assist vessels at the mooring as well as any above ground pumping and pipeline facilities. The tankers proposed for all of the projects range in size from 140,000 to 500,000 deadweight tons (dwt). These vessels are larger than those in use or planned for use at County marine terminal facilities for oil transportation which could accommodate tankers of up to 70,000 dwt. While the mooring location will likely be in an area of the coastline which is relatively undeveloped and known for scenic qualities, the mooring will be sufficiently far offshore that the presence of the tanker at the mooring will not dominate views in this area.

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DISCUSSION: (Continued)

The sensitivity of visual impacts resulting from the onshore facilities will depend on the ultimate locations of the these facilities. One of the proposals (Western Canada Water) proposed an above ground onshore pipeline which might prove difficult to screen. However, a buried pipeline could also result in visible changes in the patterns of vegetation due to disruption during trenching. Pipeline route adjustments probably could avoid visual impacts in sensitive areas.

Archeology

Construction and trenching required for onshore pipelines and pump stations and offshore pipelines could result in the disturbance of culturally or historically significant artifacts. The site of all such installations will have to be analyzed for the presence of archeological features. Specific sites and routes are not known at this time. However, route adjustments probably could avoid any sensitive sites.

Energy Consumption

The transportation of water by tanker is a very energy intensive means of providing additional water supplies, compared to conventional water supplies. The site of the water supply sources proposed for tankering are all located in British Columbia, over 1000 miles from Santa Barbara. The tankers are estimated to consume from 11,130 to 23,220 metric tons of fuel per year to deliver 5000 acre feet of water.

Construction Impacts

Short term construction impacts would occur due to the installation of the offshore mooring and pipeline, construction of onshore pumping facilities and pipelines, and possible modifications to existing reservoirs. Offshore impacts would include increased turbidity, disturbance to the seafloor and to any existing vegetation or marine animals, and possible interference with commercial fishing activity. Onshore impacts would include noise, air emissions, increased traffic, possible disruption of traffic and circulation if pipelines are laid in roadways, dust, and

Discussion continued on Page 29.

DISCUSSION: (Continued)

disturbance to vegetation. Construction of the pipeline shore-crossing could temporarily interfere with coastal access and recreation. All of these impacts would be site specific and cannot be identified precisely at this time. However, the type and scale of the construction required for all of the tankering projects is similar. All of these impacts would be short term.

Risk of Upset

If a water tanker were to go aground or to collide with another vessel or a platform, the tanker fuel or the fuel or cargo from another vessel could spill. Such an occurrence could result in significant environmental damage. However, the probability of such an event occurring is very low. An earthquake could damage part of the unloading system in Santa Barbara, resulting in an interruption of water deliveries. All of the tankering proposals were similar in the risk and potential consequences of upset.

Recreation

This issue area considers recreational impacts from operation of the project, rather than from construction. The tankering projects all would involve the preclusion of a small ocean area from use for recreational boating, due to the presence of the mooring buoy. In addition, a larger ocean area would intermittently be precluded from recreational boating to avoid navigational conflicts with the tankers while approaching, moored at, or leaving the unloading buoy. Given the limited recreational boating use of the areas likely to be identified for the mooring location, this preclusion is not expected to be of significant concern. All of the tankering proposals were similar in this regard.

7. Third Party Agreements

Third party agreements could be a significant problem for the tankering proposals. Currently, the Warren Act significantly limits the use of Bureau of Reclamation facilities such as Glen Annie Reservoir and the South Coast Conduit. Legislative relief or an acceptable exchange

Discussion continued on Page 30.

DISCUSSION: (Continued)

agreement will be necessary in order to use these facilities for tankered water. In addition, concerns regarding earthquake safety of Glen Annie Reservoir and the effect of aggressive pure water on the South Coast Conduit must be addressed to the satisfaction of the Bureau of Reclamation.

8. Permitting and Licensing

Local

All of the tankering proposals suggested projects entirely within the unincorporated areas of Santa Barbara County. Thus, the County (rather than the City) would be the lead agency for CEQA compliance and would process local land use and Coastal Development permits for the onshore portions of the project. In addition, the Santa Barbara County Air Pollution Control District (APCD) would have permitting authority if any onshore emitting sources were included. AquaSource proposed use of gas fired pumps onshore. Thus their project as proposed, including emissions from the tankers while in Santa Barbara County, would require a permit from the APCD. For projects where an APCD permit was not required, the APCD would participate in the CEQA review process and would likely seek similar levels of analysis and mitigation as would be required under their permit authority.

Given the temporary nature of the project and the experience of the County in processing applications for marine terminals along the South Coast, local permits should be obtainable for any of the tankering projects. The time available to complete environmental review and obtain permits is considerably less than would be expected under non-emergency conditions.

State

State agencies with major permitting and review authority for the tankering projects would include the California Coastal Commission, the State Lands Commission, the Department of Water Resources (if alteration of Dos Pueblos Reservoir is proposed), and the Department of Fish and Game. Important issues would be affects on marine life and terrestrial habitat, coastal recreation, fisheries, and

Discussion continued on Page 31.

DISCUSSION: (Continued)

navigational safety during the construction and operation of the marine terminal and associated pipelines. All of the proposals include similar complexity with regard to these issues. The State Department of Health Services also will have to approve the quality of water introduced into potable water distribution systems. State agencies have expressed a willingness to work with the City to expedite permitting and review procedures to ensure timely development of an emergency water supply project.

Federal

The tankering projects will require review and approval by the Army Corps of Engineers (for structures in navigable waters), US Fish and Wildlife Service, the National Oceanic and Atmospheric Administration (review of Corps permit), the US Coast Guard (operation of a marine terminal), and the US Bureau of Reclamation (USBR) (if alteration of Glen Annie Reservoir is required.) Issues for the Army Corps permit would include navigational safety, impacts to marine water quality and marine life, and integrity of the design. All of the tankering proposals include similar features which would result in similar complexity for federal permitting. The relevant federal agencies have expressed a willingness to cooperate in expediting the permitting process for an emergency water supply project.

Canadian

It is difficult to evaluate and compare the difficulty or ease of obtaining all necessary Canadian approvals for each of the tankering proposals. This is largely due to staff's lack of familiarity with and understanding of the relevant Canadian requirements. The proposers provided varying amounts of information with regard to various permitting requirements. Some of this information was conflicting. In general, rights to the water and to export the water must be obtained. Adequate collection, transmission, and loading facilities must be constructed at the water source, requiring permit approvals for the necessary improvements. Loading facilities requiring berthing or mooring facilities require approval from the Canadian Coast Guard. A variety of environmental concerns need to be addressed including

Discussion continued on Page 32.

DISCUSSION: (Continued)

forestry, fisheries, and navigational safety. It appears that permits and licenses for some amounts of water and for some facilities have been obtained by all the proposers. Staff has not had the opportunity to research the status of all of the permits and licenses that would be required for each of the proposers.

CONCLUSION

After more than 23 hours of public meetings, detailed review of the proposals, and interviews with each of the project teams, the Panel reached the following conclusions:

1. The Panel was unanimous in their selection of Ionics, Inc. as the preferred desalination project. This conclusion was based on a number of factors, including the size and financial strength of the company, the flexibility of design, and the price relative to the distillation option. The Panel was particularly impressed with the inclusion of local team members through the partnership with Bardex, a Goleta-based company. Similarly, the Panel was pleased by the proponent's suggestion that the project would be designed in concert with the environmental process, rather than in reaction thereto. There was considerable concern expressed by the Panel members regarding the extensive use of the wharf, both for the piping and the intake structure. This concern was mitigated however through the proponent's willingness to investigate the use of the abandoned sewer outfall as a possible intake structure. This flexibility and cooperative effort characterized the Ionics approach, and was of considerable influence in the Panel's selection process.

2. The Panel ranked the Ambient Technologies Inc. distillation proposal as second among the desalination proposals. The decision to rank Ambient as second was also unanimous, as the Panel could not find compensating benefits to offset the expensive, energy intensive, and massive aspects of the project. The Ambient Technologies proposal called for a very tall, uncovered industrial plant at the Yanonali Street site, which used approximately 50% more energy than either of the reverse osmosis proposals. The Panel also expressed concern regarding the impacts created by the proposed construction of a massive intake structure off the end of

Discussion continued on Page 33.

DISCUSSION: (Continued)

Stearn's Wharf. In finding the project superior to that submitted by Aqua Design, the Panel cited the significant financial resources of the parent company, Israel Desalination Engineering, and the better quality of the resulting water. As previously stated however, the Panel did not feel that either of these benefits outweighed the negative aspects of the project.

3. Aqua Design, Inc. was unanimously identified by the Panel as the third choice among the desalination proposals. The Panel shared serious concerns about the financial strength of the company, based on the company's unwillingness to release their financial statements, nonresponsiveness regarding their bonding capabilities, and their decision to finance this project through a lease/purchase arrangement with a non-partner lending institution. In addition to these concerns, the Panel was not convinced that the proponents of the project had fully evaluated all parameters of the project, as demonstrated by a limited investigation of the abandoned outfall, no details regarding the intake structure, no site reconnaissance, inaccurate assumptions concerning the availability of certain facilities (the Waterfront office), and unwillingness to increase the size of the facility following groundbreaking.

4. The Panel had an extremely difficult time reaching any recommendations regarding the three tankering proposals. The Panel shared a variety of reservations concerning all three proposals which went beyond the significant concern of cost. Repeatedly, the Panel expressed frustration that Santa Barbara would be the first and only customer of any of the companies, as there are currently no companies engaged in bulk water tankering to the United States. The Panel was further concerned by the myriad of permitting and environmental considerations that were unique to tankering, including the Canadian licensing and permitting regulations. Even on the local level, the tankering options involve several additional agency reviews and permits beyond those required for a desalination project.

Discussion continued on Page 34.

DISCUSSION: (Continued)

5. After considerable discussion, the Panel concluded that Sun Belt Water, Inc. offered the most acceptable proposal of the three submitted. The Panel felt that the local presence of the company, combined with the financial backing of the Bank of America, provided an acceptable level of assurance. Sun Belt Water also submitted a significantly lower price proposal than that received from either Western Canada Water or Aqua Source. The Panel did discuss at considerable length the sound financial resources of Aqua Source and the thorough approach presented by Western Canada, but concluded that neither company's proposal was sufficient to offset the increased cost of both submittals.

6. The Panel concluded their recommendations by giving a unanimous endorsement to Ionics, Inc., as the preferred alternative water supply project.

PROJECT IMPLEMENTATION SCHEDULE

August 14, 1990	Council authorization to negotiate a contract.
August 24, 1990	Environmental Review Committee determination of required Environmental Review.
September 11, 1990	Council authorization to execute a contract.
April 1991	Certification of EIR if required.
April/May 1991	Completion of major permitting.
May 1991	Council approval of Notice to Proceed with construction of the project.
February 1992	Delivery of Water.

Discussion continued on Page 35.

DISCUSSION: (Continued)

DECISION PROCESS SCHEDULE

August 7, 1990 at 2:00 PM	Presentation of Panel conclusions and recommendations to joint work session of City Council, Water Commission and the Environmental Review Committee.
August 7, 1990 at 7:00 PM	Public Hearing - also broadcast on Channel 18.
August 8 - 13, 1990	Telephone lines available for public comment and questions: 564-5460
August 14, 1990 at 10:00 AM	Public Hearing - also broadcast on Channel 18.
August 14, 1990 at 2:00 PM	Decision by City Council - also broadcast on Channel 18.

The proposals are available for public review in the City Clerk's office. Copies of the proposals may be purchased at Kinko's Copies, 4141 State Street, Santa Barbara.

1990–1993

ATTACHMENT A

CITY OF SANTA BARBARA
WATER SUPPLY and REVENUE PLAN

DRAF

03-Aug-90

SUPPLY SOURCE

	90–91		91–92		92–93	
	ACRE FEET	REVENUE	ACRE FEET	REVENUE	ACRE FEET	REVENUE
EXISTING-GOOD CONFIDENCE						
GIBRALTAR RESERVOIR	500		1,000		1,000	
CACHUMA ALLOTMENT	5,152		4,215		0	
CACHUMA CARRYOVER	1,957		1,100		0	
MISSION TUNNEL	400		400		300	
MONTECITO AGREEMENT	0		300		300	
OLD WELLS,SAFE YIELD	1,400		1,400		1,400	
OLD WELLS,OVERDRAFT	1,200		1,200		1,200	
ALAMEDA & PARMA WELL,NEW	336		672		672	
RECLAIMED PHASE I	300		500		500	
SUB-TOTAL:	11,245	$13,650	10,787	$13,300	5,372	$14,000
PROBABLE NEW SOURCES						
RECLAIMED PHASE II	0		100		400	
ADDL FOOTHILL OVRDRFT	200		1,500		2,000	
VENTURA-STATE WATER	700		1,000		0	
DESAL/TANKERING	0		0		5,000	
SUB-TOTAL:	900		2,600		7,400	
CUMULATIVE SUB-TOTAL:	12,145	$15,770	13,387	$15,300	12,772	$25,400
SPECULATIVE SOURCES						
MISSION TUNNEL ENHANCEMENT	0		0		500	
GIBRALTAR SILT WELLS	200		200		0	
BEDROCK WELLS	?		?		?	
SUB-TOTAL:	200		200		500	
OVERALL TOTAL:	12,345	$15,900	13,587	$16,230	13,272	$25,400

ASSUMPTIONS

1 NORMAL SYSTEM DEMAND IS 16,732 AF(POTABLE/RECLAIMED),WHICH INCLUDES NEW DEVELOPMENT OFFSET BY LONGTERM CONSERVATION
2 RUNOFF INTO GIBRALTAR OCCURS EVEN IN DRIEST YEAR.
3 CACHUMA CARRYOVER INCLUDES ADDITIONAL WATER AS A RESULT O CONSERVATION SINCE IMPLEMENTATION OF STAGE II;AND BUREAU OF RECLAMATION DECISION NOT TO CHARGE EVAPORATION LOSSES.
4 PUMPING NEW/REACTIVATED WELLS CONTINUES FOR APPROX. 3 YRS.
5 OVERDRAFTING GROUNDWATER REQUIRES REPLENISHMENT OF BASIN WITH PORTION OF FUTURE WATER SUPLLIES.

G - Good
S - Satisfactory
P - Poor
U - Unknown
NR - Non Responsive

ATTACHMENT B

DESALINATION

EVALUATION OF ISSUES

	IONICS	AQUA DESIGN	AMB. TECH
1. Overall System Design			
Completeness	G	S	G
Reliability	S	S	S
Flexibility	G	S	S
Feasibility	G	G	G
2. Facility Construction/Equipment Acquisition			
Local: Schedule & Existing/New	S	S	S
Long Lead Time	G	G	S
3. Cost (5,000 AF per year, current dollars)			
5-Year Option (cost per AF)	$1953	$1838	$2390
2nd 5-Year Period (cost per AF)	$ 949	$1097	$ 957
Initial Long-Term Standby Costs (cost per AF)	$1175	$1114	$1720
4. Reliability of Firm			
Financial Strength	G	P	S
Bonding Capability	S	NR	S
Experience with Proposed System	G	G	G
Project Team	G	S	S
5. Flexibility			
Variable Water Production	G	S	G
Cost of Change	S	S	S
Regional Application	S	P	S
Temporary	G	G	S
Long Term Potential	S	S	G
6. Environmental			
Chemical Use and Storage	S	S	S
Product Water Quality	G	G	G
Air Quality	S	S	S
Marine Life and Aquatic Biology	S	S	U
Sensitive Habitat Onshore	U	G	G
Noise	S	S	S
Aesthetics	S	S	P
Archaeology	U	S	U
Energy Consumption	S	S	P
Construction Impacts (short-term)	P	S	P
Risk of Upset	S	S	S
Recreation	S	S	P
7. Third Party Agreements	G	G	G
8. Permitting and Licensing			
Local	G	G	G
State	S	G	P
Federal	G	G	S

G - Good
S - Satisfactory
P - Poor
U - Unknown
NR - Non Responsive

ATTACHMENT C

TANKERING

EVALUATION OF ISSUES

		WEST CAN	SUN BELT	AQUA SOURCE
1.	Overall System Design			
	Completeness	S	P	S
	Reliability	S	S	S
	Flexibility	G	G	G
	Feasibility	S	S	S
2.	Facility Construction/Equipment Acquisition			
	Local: Schedule & Existing/New	S	S	S
	Canadian: Schedule & Existing/New	G	G	S
	Long Lead Time	S	S	S
3.	Cost (5,000 AF per year, current dollars)			
	5-Year Option (cost per AF)	$4269	$3195	$4912
	2nd 5-Year Peirod (cost per AF)	$2825	$2022	$3554
	Initial Long-Term Standby Costs (cost per AF)	$3261	$3116	$3153
4.	Reliability of Firm			
	Financial Strength	S	U	G
	Bonding Capability	S	U	G
	Experience with Proposed System	P	P	P
	Project Team	S	S	S
5.	Flexibility			
	Variable Water Production	S	S	S
	Cost of Change	P	P	P
	Regional Application	G	G	G
	Temporary	S	S	S
	Long Term Potential	S	S	S
6.	Environmental			
	Chemical Use and Storage	S	S	S
	Product Water Quality	G	G	G
	Air Quality	P	P	P
	Marine Life and Aquatic Biology	U	U	U
	Sensitive Habitat Onshore	S	S	S
	Noise	S	S	S
	Aesthetics	S	S	S
	Archaeology	S	S	S
	Energy Consumption	P	P	P
	Construction Impacts	S	S	S
	Risk of Upset	S	S	S
	Recreation	S	S	S
7.	Third Party Agreements	P	P	P
8.	Permitting and Licensing			
	Local	S	S	S
	State	S	S	S
	Federal	S	S	S
	Canadian (including water export)	U	U	U

ATTACHMENT D

SUMMARY FINANCIAL INFORMATION

The following attachment is a summary of financial information of the various proposers. To assist in understanding the attachment, a definition of terms and abbreviations is necessary.

Interest Rate/ Equity Return	Shows the imputed interest rate used by the proposers.
Materials & Payroll OH%	Reflect additional mark-up in the event the City does not proceed after contract is signed.
Buy-out Clause	Summarizes the method of arriving at purchase price if City wishes to acquire the facilities.
Escalation	Indices used to adjust delivery costs over the life of the contract.
Risk Items	Items specifically identified by each proposer where the City is "at risk".
Bonding	Company indicating the possibility of bonding.
Financial Firm	Company providing financing for the project.
Financial Assets	Evaluation by staff based on financial information provided and/or obtained.

ABBREVIATIONS

Decom - Decommissioning Costs
Amort Cap - Amortized Capital
NCPI - National Consumer Price Index
Elect index - Changes in electrical power rates
S Cal CPI - Southern California Consumer Price Index

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SUMMARY FINANCIAL INFORMATION

CATEGORY	IONICS	AQUA DESIGN	AMBIENT
Interest rate - Equity return	9.00%	12.00%	9.00%
Material O/H %	125.00%	115.00%	115.00%
Payroll O/H %	125.00%	280.00%	115.00%
Buy-out Clause	Costs + 25% - Decom - Amort Cap	Capital costs - Saved costs + Negotiated	Unamortized Capital Value
Escalation	30% NCPI + (+,-) Elect	S Cal CPI	70% Elec index 30% NCPI
Risk Items	New Taxes Add. Pilings	Interest Rates	New Taxes
FINANCIAL STRENGTH Bonding	Chubb Group	Not Provided	CIGNA
Financing Firm	Paine Webber	Mitsui	Israel Export
Financial Assets	Good	Not Provided	Good

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SUMMARY FINANCIAL INFORMATION

CATEGORY	WESTERN	SUNBELT	AQUA SOURCE
Interest rate - Equity return	8.50%	11.00%	12.00%
Material O/H %	110.00%	100.00%	118.00%
Payroll O/H %	110.00%	100.00%	118.00%
Buy-out Clause	Costs + 10% + Overhead - Amort Cap	Will Retain Local Assets	Will Sell Local Assets For $1.00
Escalation	NCPI	Platt Waterborne Labor - BLS LA World Scale Charter Rates	7.00% Platt Waterborn
Risk Items	None	Sec. of Payment	None
FINANCIAL STRENGTH			
Bonding	Reed Stenhouse	MDM Assoc.	CIGNA
Financing Firm	Barclay Canada	B of A	Seafirst
Financial Assets	Poor	Unknown	Good

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 2,500 AF

CATEGORY	IONICS	AQUA DESIGN	AMBIENT
CAPITAL COSTS			
Facilities	9,920,000	8,100,000	14,877,000
Permit & envir	1,174,000	500,000	350,000
Other			
Financing costs	3,051,000	2,563,847	4,346,750
Decommisioning	0	150,000	0
Total	14,145,000	11,313,847	19,573,750
ANNUAL COSTS			
Annual Capital	2,829,000	2,262,769	3,914,750
Annual Delivery	2,772,500	2,940,000	2,572,500
Total Annual	5,601,500	5,202,769	6,487,250
ACRE FOOT COSTS			
Capital Cost/AF	1,132	905	1,566
Delivery Cost/AF	1,109	1,176	1,029
Total Cost/AF	2,241	2,081	2,595
PRESENT VALUE -			
5 YR Operations	2,041	1,918	2,325
3 YR Operations	2,826	2,725	3,444
10 YR Operations	1,566	1,537	1,677
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term stand-by (Less than six months)	1,466	1,413	1,925
Long-term Stand-by (Over six months)	1,347	1,413	1,925
Extension (Second 5 years)			
Shortterm stand-by	518	588	360
Longterm Stand-by	399	588	360

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 5,000 AF

CATEGORY	IONICS	AQUA DESIGN	AMBIENT
CAPITAL COSTS			
Facilities	18,412,000	12,800,000	27,511,600
Permit & envir	1,274,000	500,000	350,000
Other			
Financing costs	5,414,000	4,936,290	7,953,400
Decommisioning	0	300,000	0
Total	25,100,000	18,536,290	35,815,000
ANNUAL COSTS			
Annual Capital	5,020,000	3,707,258	7,163,000
Annual Delivery	4,745,000	5,485,000	4,785,000
Total Annual Costs	9,765,000	9,192,258	11,948,000
ACRE FOOT COSTS			
Capital Cost/AF	1,004	741	1,433
Delivery Cost/AF	949	1,097	957
Total Cost/AF	1,953	1,838	2,390
PRESENT VALUE -			
5 YR Operations	1,776	1,703	2,143
3 YR Operations	2,462	2,374	3,144
10 YR Operations	1,354	1,390	1,549
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term Stand-by (Less than six months)	1,250	1,114	1,720
Long-term Stand-by (Over six months)	1,175	1,114	1,720
Extension (Second 5 years)			
Shortterm Stand-by	422	473	287
Longterm Stand-by	347	473	287

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 7,500 AF

CATEGORY	WESTERN	SUNBELT	AQUA SOURCE
CAPITAL COSTS			
Facilities	35,818,000	19,500,000	24,695,000
Permit & envir	75,000	1,000,000	150,000
Other		1,000,000	2,800,000
Financing costs	3,955,103	7,585,000	7,375,000
Decommisioning	0	250,000	250,000
Total	39,848,103	29,335,000	35,270,000
ANNUAL COSTS			
Annual Capital	7,969,621	5,867,000	7,054,000
Annual Delivery	20,107,500	13,890,000	23,790,000
Total Annual	28,077,121	19,757,000	30,844,000
ACRE FOOT COSTS			
Capital Cost/AF	1,063	782	941
Adjustment/AF	(100)		
Delivery Cost/AF	2,681	1,852	3,172
Total Cost/AF	3,644	2,634	4,113
PRESENT VALUE -			
5 YR Operations	3,452	2,482	3,918
3 YR Operations	4,595	3,635	5,395
10 YR Operations	3,043	2,151	3,518
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term Stand-by (Less than six months)	2,337	1,582	3,306
Long-term Stand-by (Over six months)	2,337	2,074	2,661
Extension (Second 5 year	1,375	806	2,161
Shortterm Stand-by			
	1,375	1,298	1,916
Longterm Stand-by			

CITY OF SANTA BARBARA

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 10,000 AF

CATEGORY	WESTERN	SUNBELT	AQUA SOURCE
CAPITAL COSTS			
Facilities	35,818,000	19,500,000	23,975,000
Permit & envir	75,000	1,000,000	150,000
Other		1,000,000	2,525,000
Financing costs	3,955,103	7,585,000	7,150,000
Decommisioning	0	250,000	250,000
Total	39,848,103	29,335,000	34,050,000
ANNUAL COSTS			
Annual Capital	7,969,621	5,867,000	6,810,000
Annual Delivery	25,320,000	18,120,000	35,540,000
Total Annual Costs	33,289,621	23,987,000	42,350,000
ACRE FOOT COSTS			
Capital Cost/AF	797	587	681
Adjustment/AF	(75)		
Delivery Cost/AF	2,532	1,8[illegible]2	3,554
Total Cost/AF	3,254	2,399	4,235
PRESENT VALUE -			
5 YR Operations	3,103	2,280	4,078
3 YR Operations	3,977	3,145	5,676
10 YR Operations	2,796	2,030	3,785
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term Stand-by (Less than six months)	1,874	1,187	3,665
Long-term Stand-by (Over six months)	1,874	1,555	2,916
Extension (Second 5 years)			
Shortterm Stand-by	1,153	606	2,249
Longterm Stand-by	1,153	974	1,993

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 2,500 AF

CATEGORY	WESTERN	SUNBELT	AQUA SOURCE
CAPITAL COSTS			
Facilities	16,847,000	19,500,000	24,140,000
Permit & envir	75,000	1,000,000	150,000
Other		1,000,000	2,600,000
Financing costs	4,239,714	7,585,000	10,585,000
Decommisioning	0	250,000	250,000
Total	21,161,714	29,335,000	37,725,000
ANNUAL COSTS			
Annual Capital	4,232,343	5,867,000	7,545,000
Annual Delivery	9,375,000	6,125,000	13,805,000
Total Annual	13,607,343	11,992,000	21,350,000
ACRE FOOT COSTS			
Capital Cost/AF	1,693	2,347	3,018
Adjustment/AF	(150)		
Delivery Cost/AF	3,750	2,450	5,522
Total Cost/AF	5,293	4,797	8,540
PRESENT VALUE -			
5 YR Operations	4,991	4,381	7,975
3 YR Operations	7,212	7,077	12,012
10 YR Operations	4,338	3,394	6,701
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term stand -by (Less than six months)	4,380	2,628	8,420
Long-term Stand-by (Over six months)	4,380	4,797	7,243
Extension (Second 5 years)			
Shortterm stand-by	2,839	1,306	6,875
Longterm Stand-by	2,839	3,900	6,875

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 5,000 AF

CATEGORY	WESTERN	SUNBELT	AQUA SOURCE
CAPITAL COSTS			
Facilities	35,818,000	19,500,000	23,875,000
Permit & envir	75,000	1,000,000	150,000
Other		1,000,000	2,525,000
Financing costs	3,955,103	7,585,000	7,150,000
Decommisioning	0	250,000	250,000
Total	39,848,103	29,335,000	33,950,000
ANNUAL COSTS			
Annual Capital	7,969,621	5,867,000	6,790,000
Annual Delivery	14,125,000	10,110,000	17,770,000
Total Annual Costs	22,094,621	15,977,000	24,560,000
ACRE FOOT COSTS			
Capital Cost/AF	1,594	1,173	1,358
Adjustments	(150)		
Delivery Cost/AF	2,825	2,022	3,554
Total Cost/AF	4,269	3,195	4,912
PRESENT VALUE -			
5 YR Operations	3,996	2,977	4,644
3 YR Operations	4,692	4,708	6,408
10 YR Operations	3,386	2,482	4,068
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term Stand-by (Less than six months)	3,261	2,142	3,996
Long-term Stand-by (Over six months)	3,261	3,116	3,153
Extension (Second 5 years)			
Shortterm Stand-by	1,819	979	2,339
Longterm Stand-by	1,819	1,952	2,075

CITY OF SANTA BARBARA
EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 7,500 AF

CATEGORY	IONICS	AQUA DESIGN	AMBIENT
CAPITAL COSTS			
Facilities	27,997,000	17,200,000	38,816,800
Permit & envir	1,374,000	500,000	350,000
Other			
Financing costs	8,079,000	6,901,712	11,180,700
Decommisioning	0	450,000	0
Total	37,450,000	25,051,712	50,347,500
ANNUAL COSTS			
Annual Capital	7,490,000	5,010,342	10,069,500
Annual Delivery	6,892,500	7,710,000	7,140,000
Total Annual	14,382,500	12,720,342	17,209,500
ACRE FOOT COSTS			
Capital Cost/AF	999	668	1,343
Delivery Cost/AF	919	1,028	952
Total Cost/AF	1,918	1,696	2,295
PRESENT VALUE -			
5 YR Operations	1,742	1,573	2,063
3 YR Operations	2,417	2,176	3,008
10 YR Operations	1,323	1,292	1,507
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term Stand-by (Less than six months)	1,215	992	1,625
Long-term Stand-by (Over six months)	1,154	992	1,625
Extension (Second 5 years)			
Shortterm Stand-by	392	404	282
Longterm Stand-by	331	404	282

ATTACHMENT E

COSTS COMPARISON OF PROPOSALS

The following attachment is a cost comparison of the various proposers. To assist in understanding the attachment, a definition of terms and abbreviations is necessary. Several of the proposers requested to have adjustments made for a variety of reasons, adjustments are not included in the numbers provided unless the RFP was not correctly adhered to or items omitted.

Capital Costs	Include all items such as construction, permitting, financing, an decommissioning to be included in the capital component of charges to the City.
Annual Costs	Provides a breakdown of capital and delivery costs on an annual basis.
Acre foot Costs	Provides acre foot costs by capital and delivery costs at the beginning of the contract.
Present Value	This item evaluates the long-term effect of differences in fixed and variable components of the charges to the City over the life of the contract. The assumption of 7% is used.
5 YR Operations	This scenario assumes the City contract for the five years, and accept all contracted water.
3 YR Operations	This scenario assumes the City contracts for a five year period, and declines to accept water after the initial three year period.
10 YR Operations	This scenario assumes the City contracts for a five year period, renews the contract for an additional five year period, and receives water for the entire period.
Stand-by Costs	Stand-by costs are charges required of the City if the City determines water delivery is not necessary.

Several of the proposers requested to have adjustments made for a variety of reasons, adjustments are not included in the numbers provided unless the RFP was not correctly adhered to or items omitted. Aqua Design did not include power for a pump. The estimated costs for this is $34/AF, which during interviews Aqua Design agreed would be absorbed by the firm. Western Canada Water capital costs were adjusted due to non-conformance with the RFP. Their proposal required lump sum payments at the end of the five year period. Costs were provided by Western Canada Water during their interview for the five year amortization. However, an adjustment amount is shown as unresolved amount between capital costs shown and acre foot costs provided.

RESOLUTION NO.______

A RESOLUTION OF THE COUNCIL OF THE CITY OF SANTA BARBARA WAIVING THE PROVISIONS OF CHARTER SECTION 519 RELATING TO PUBLIC WORKS CONTRACTS.

<u>Recitals</u>

WHEREAS, the Council of the City of Santa Barbara has declared a local emergency due to the drought; and

WHEREAS, at the City's request, the Governor of the State of California, pursuant to Government Code Section 8558, has proclaimed a state of emergency to exists throughout the City, based upon a finding of extreme water shortage; and

WHEREAS, the Council of the City of Santa Barbara has, in accordance with Water Code Section 350 through 358, declared that a water shortage emergency condition now exists;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SANTA BARBARA THAT:

Due to the urgent need for new water supplies in the City of Santa Barbara to preserve the life, health and property of the citizens of the City, the provisions of Charter Section 519 relating to Public Works contracts are hereby waived for the purpose of contracting with an emergency temporary water supply project proponent.

EMERGENCY WATER SUPPLY PROJECT
SECOND SUBMITTAL COMPARISON OF WATER SUPPLY ALTERNATIVES

EVALUATION of 10,000 AF

CATEGORY	IONICS	AQUA DESIGN	AMBIENT
CAPITAL COSTS			
Facilities	36,175,000		50,542,100
Permit & envir	1,474,000		350,000
Other			
Financing costs	10,351,000		13,627,900
Decommisioning	0		0
Total	48,000,000		64,520,000
ANNUAL COSTS			
Annual Capital	9,600,000		12,904,000
Annual Delivery	9,060,000		9,290,000
Total Annual Costs	18,660,000		22,194,000
ACRE FOOT COSTS			
Capital Cost/AF	960		1,290
Delivery Cost/AF	906		929
Total Cost/AF	1,866		2,219
PRESENT VALUE -			
5 YR Operations	1,697		1,996
3 YR Operations	2,345		2,903
10 YR Operations	1,294		1,462
STAND-BY COSTS/AF			
Initial (First 5 years)			
Short-term Stand-by (Less than six months)	1,163		1,559
Long-term Stand-by (Over six months)	1,109		1,559
Extension (Second 5 years)			
Shortterm Stand-by	379		268
Longterm Stand-by	325		268

APPENDIX E

COMMENTS AND RESPONSES

The Draft EIR was made public on December 21, 1990. Twenty comment letters on the Draft EIR were received and are listed in Table E-1. The letters are numbered 1 through 20, and individual comments which are presented in each letter are also numbered.

The comments are delineated by vertical lines in the left hand margin of the letters and with item numbers (e.g., 1-1, 1-2, 2-1, 2-2, 2-3, ...). The responses to comments are presented in sequential order following each letter.

Numbered codes in the margins of the main text of this Final Environmental Impact Report (Final EIR) are intended to guide the reader to discussions in the responses to comments.

Comments and responses follow.

Table E-1. COMMENT LETTERS RECEIVED ON DRAFT EIR

Comment Letter ID #	Author or Originator	Number of Comments Identified
1	Fred Keller	3
2	Edward McGowan	7
3	NOAA/James Slawson	1
4	Phil Beautrow	3
5	CalTrans/Sarah Chesebro	1
6	DOHS/John Curphey	5
7	Rod Sumner & Associates	6
8	John Baum	2
9	John Baum	50
10	Santa Barbara County, Air Pollution Control District/Jean Thompson	5
11	Stanley Mendes, Inc.	9
12	Santa Barbara County, Resource Management Department/Jeffrey Harris	25
13	Cohen, England & Whitfield/David Tredway	23
14	Citizens Planning Association of Santa Barbara County, Inc./Arve Sjovold	11
15	Send Them Back/Richard Stromme	7
16	Santa Barbara Chamber of Commerce/Pier Gherini, Jr., and Steve Cushman	11
17	Environmental Defense Center/Linda Krop	100
18	OPR, State Clearinghouse/David Nunenkamp	5
19	City of Santa Barbara, Desalination Review Committee	54

Table E-1. COMMENT LETTERS RECEIVED ON DRAFT EIR (concluded)

Comment Letter ID #	Author or Originator	Number of Comments Identified
20	City of Santa Barbara/EIR Staff	6

FRED KELLER
22 Canyon Acres Drive
Santa Barbara, California 93105

RECEIVED
JAN 9 1991
CITY OF SANTA BARBARA
PLANNING DIVISION

9 January 91

Mitch Oshinsky, Principal Planner
Community Development
630 Garden St.
Santa Barbara, CA 93102

Re: SB-106-90 Draft EIR -- Temporary Desalination Plant

Dear Sir:

In reviewing the subject document, I find myself in general
agreement with the proposal; however, there are a few points
which I feel should be addressed.
I feel that the initial argument used to justify the lack of
special precautions in the construction of the project in
view of the land being subject to possible liquifaction in
the event of strong seismic activity uses circular
reasoning. The draft references a study in connection with
the construction of the adjoining Wastewater Treatment Plant
which concluded that no special precautions were required
for that structure and used that conclusion as justifying
the lack of such measures in the proposed project.
1-1 It is my understanding that, in recognition of the unstable
nature of the underlying soils and the vulnerability of the
site to seismic activity, the City went to considerable
expense to anchor the structures on pilings as a safety
measure. If my impression is correct, it would appear that
the City has already made a judgement in the matter of the
Waste water Plant and opted for prudence. The reasoning
offered in the Draft would thus not seem to apply. The City,
by its' action would appear to have overruled the initial
conclusion. I recognize that the present proposal is for a
temporary project and that risks may be acceptable on a
short term in an emergency which would not be acceptable for
a permanent installation. With this in mind, I would suggest
that the attempt to justify the proposed project, from a
risk standpoint, by reference to the existing Waste water
Treatment Plant be deleted or substantially modified.
The risk of sewage ponding, as mentioned by Mr. Mendes at
the Public Hearing, should not be overlooked for the long
term. If his observations are valid, it would seem that the
proposed site is not compatible with a potable water plant.
1-2 The EIR should address safety precautions to prevent
contamination of the water supply in the event of a
significant seismic event. It should be noted that the
proposed process calls for treatment/disinfection prior to
the feed water being pumped through the membrane and thence
into the distribution system.
As a matter of consistency, the descaling agents should be
1-3 defined. The chemical entities should be listed.
Thank you for your attention.

Sincerely.

Fred Keller

Response 1-1: The discussion on page 3-2 of the DEIR regarding low liquefaction potential and the lack of need for special precautions to mitigate hazards relates to the Wastewater Reclamation Plant site not the El Estero Wastewater Treatment Plant (El Estero WWTP). The El Estero WWTP did require special mitigation for seismic/liquefaction hazards due to its heavy, concentrated loading. Special mitigation measures related to seismic/liquefaction hazards were required for the El Estero WWTP. Seismic related hazards including liquefaction are recognized in Section 3.2 of the DEIR and appropriate mitigation measures are stipulated. A Geotechnical Study has been prepared for the desalination project and is referenced in Appendix F.

Response 1-2: Safety precautions to prevent contamination of the City's water supply in the event of a seismic event are addressed in the DEIR, and include seismic hazard mitigation measures (Section 3.2), disinfection of incoming seawater and treated product water, and physical separation of potable water and sewage lines in accordance with State Department of Health Services requirements. In addition, all chemical lines will be double wall pipes and all chemical storage areas will have secondary containment. In the event of a seismic event, the desalination plant would be shut down, if necessary, to inspect and check the integrity of all piping and systems.

Response 1-3: Antiscalant is a polymer solution (polyacrylic acid) which inhibits inorganic scale formation in reverse osmosis systems. Antiscalants (e.g., Pfizer Flocon 100 and B.F. Goodrich AF-600) are accepted for potable water use by the U.S. EPA as well as State agencies. These antiscalants do not contain any hazardous ingredients according to the Material Safety Data Sheets and are not considered to be hazardous materials as defined by OSHA in its Hazard Communication Standard (29 CFR 1910.1200). These antiscalants range in pH from 3 to 5 and may result in mild skin irritation with prolonged contact. Refer to Table 2-7 in the EIR regarding proposed use and storage of antiscalant.

Environmental Review Committee 1/10/91
City of Santa Barbara

2-1 You have asked for comments on waste water and alternative technologies. The choice of technologies may be driven by current policy constraints not previously considered. Under Article 80 of the Uniform Fire Code, any new change to a permit for the El Estero Plant may require a comprehensive RMPP related to the large stocks to toxic gases (chlorine and SO2). To comply with Art 80 may also require substantial changes to the buildings and structures primarily based on mitigating the escape of toxic gases. The addition of the RO plant may also drive this requirement. The risk of upset, as spelled out in the RMPP, as well as the capacity for emergency response, must also be considered in the EIR. The potential for a major rupture in a one-ton chlorine or SO2 cylinder, and the extent of a toxic cloud in the community surrounding either the RO plant or POTW must be considered in both the RMPP and EIR (please remember that these cylinders are averaging fifty years in age, there have already been some major accidents). The effect of a major release would be significantly adverse, thereby requiring overriding considerations. In developing the findings for such overriding considerations, one would expect considerable opposition arising from sectors opposed to the changes. One could also raise serious questions relating to the current level of training for such an event amongst emergency responders. Additionally there is some question of efficacy in actual response by the fire department in the event of a major toxic gas release, especially during peak traffic. Since the surrounding area consists of mixed high density and tourism, the RMPP may spell out substantial alterations in current City plans. The expansion or modifaction of the POTW for purposes of reclamation and the RO plant may therefore be retarded by the new Article 80 requirements.

2-2 A partial offset to this dilemma may be found in the use of ozone, not now covered under Art. 80 and also not posing a similar threat. Ozone is generated as needed, not stored in large cylinders. In a previous letter (copy attached) it was suggested that the City evaluate current ozone technology. The City may wish, as suggested, to now review the process being used at the City of Sanger. It must be remembered that the ozonted DAF process used at Sanger is substantially different and vasly more efficent than previous processes which used ozone. The City's review of the enclosed letter may not have appreciated this fact. The process as used for Sanger will eliminate the need for chlorine, hence the issues related to risk of upset and the RMPP. The process at Sanger is also seen to reduce that plant's power requirements by approximately 50 percent.

Should the City wish to pursue this in greater detail, I would be most pleased to discuss the matter.

Edward McGowan, PhD
823 Laguna St.
Santa Barbara, 93101
encls.

Ms. Jeanne Graffy, Councilwoman
City Council
City of Santa Barbara
De la Guerra Plaza
Santa Barbara, Calif. 93101

Re: Water and Related Costs

Dear Ms. Graffy:

Our busy schedules preclude ease of appointment, thereby seeming to frustrate effective discussion. Nonetheless, I feel that important issues can be communicated. This letter is an introduction to the referenced subject, thereby allowing your review of the concepts and data. After you have a chance to digest the information, I hope we can continue the discussion.

I would like to explore three interrelated areas of water: 1) the use of sewer effluent and related costs, 2) the impacts and costs attributed to Prop 128, and 3) the quality of drinking water.

SEWER PLANTS AND WATER COSTS

On October 18, the Santa Barbara Independent carried a series on Prop 128. In its article GOING FOR THE GREEN, the paper mentioned the estimates of cost attributed to Prop 128; especially interesting to me were comments about sewer treatment costs. I would like to expand the discussion.

2-3 The article indicated that the City of Santa Barbara estimated $1.8 million in costs plus operating expenses as accruing to Prop 128 for the sewer plant. It appears that the City's argument is 1) fiscally derived (no externalities) and 2) relates to a need under Prop 128 to change the processing of sewage; a process that would use ozone rather than chlorine. The argument indicates that use of ozone would be substantially more expensive than the present use of chlorine. The bases for these arguments ignore current technology. Additionally these arguments, which are made from the more narrow fiscal perspective, understate many externalities, both positive and negative. Let's for a moment examine these arguments.

The Santa Barbara plant (El Estero) has recently undergone extensive up-grading. On the face of it and from a political and budgetary perspective, it would be difficult to justify more, and presumabely costlier, major changes. How valid is the argument against switching from environmentally less desireable chlorine to processes using ozone?

First it is not just ozone. Rather it is the HOW of its use, and with what added technology. The use of ozone in processing waste water by other agencies has shown substantial cost savings. These

savings accrue to both capital and operating costs, hence the tax base. Further, through the elimination of chlorine, there are major overall environmental benefits. Interestingly, the technology using ozone was developed by the oil industry for its waste water output. The process is now used to cleanup a wide variety of water related waste, including rinse water from commercial pesticide application equipment.

The technology uses micron size bubbles of ozone injected under high pressure. These bubbles rapidly float the solids up and off, rather than using gravity and waiting for the solids to settle (El Estero uses settling). The process is called by its acronym DAF, for Dissolved Air Flotation. Once the DAF floats up the solids they are removed as sludge. The sludge then enters a digester, becoming activated sludge. This form of sludge processing gives about four times the gas out put as the El Estero process. The methane gas is used to run generators which inturn run the plant. The DAF process is currently used by the
2-3 City of Turlock. Turlock's sewer plant, by rearranging its processing, generates enough power (sewer methane gas) from activated sludge to operate the plant by co-generation. If I am not mistaken, Turlock also sells excess power back to the utility grid.

The City of Sanger, another small burg in the Central Valley (about the size of Goleta) is also finding that ozone may be the cheaper technology. Sanger is in the experimental stages. The preliminary figures indicate a direct 67% reduction in plant power requirements (well that's theoretical--it will probably be about 50%) and elimination of chlorine. If the plant is retrofitted for gas production from activated sludge, the external power requirement may be zero. Santa Barbara's power bill for its sewer treatment works is now $65,000 per month. That is not bad for the process it operates, but that is a cost still somehow tied to the world price of fuels and a cost that could be reduced.

THE ENVIRONMENTAL QUESTION

Now that you have some background, the complex question which should be ask by the City: Would retro-fitting with ozone/DAF technology, along with the accompanying by-product of co-generated power and reduction of utility costs, be sufficent to offset operational and conversion costs, thereby making loss of
2-4 chlorine an inexpensive environmental advantage?

The City of Sanger evidently thinks so. Once it has adopted the ozone/DAF technology it will be able to discharge a very clean effulent to the Kings River, which it now can not because of chlorine and poor quality of discharged effluent. The water added to the Kings is seen as a way to help maintain the river's fishery and its riparian systems. The technology change will also

2-4 help Sanger greatly reduce the area needed for its treatment ponds. Thus expensive expansion is no longer an acute issue. By adopting an appropriate form of technology, both the city and environment benefit. The bottom line and ahead of Prop 128: to discharge its water in this way, Sanger must come up with a technology that is at once cost effective. and environmentally sound.

SANTA BARBARA'S GROUND WATER

One of our principal aquifers underlying the City of Santa Barbara is experiencing seawater intrusion. It is also being contaminated with raw sewage from the city's old and leaking sewers, but that is a matter for another discussion. You are no doubt aware that 1) adequately treated sewer effluent would make a good injection barrier against intruding seawater and 2) the permit process is considerably less stringent than straight recharge injection. About 40 % of the injected barrier water would be picked up as usable formation water.

2-5 With that in mind, and during discussions with the City of Sanger, I ask the City's consultants if the quality of water produced by ozone/DAF would be adequate for barrier injection. I was told that there was a very high probably that the effluent from El Estero, when properly treated with the ozone process, would provide an inexpensive, very high quality water for injection. The consultants also indicated that they would like to run a pilot test at El Estero. In pursuing this further, I am told that there could be sufficent interest to obtain a test at essentially little or no cost.

Sanger is involved in a research design which operates under the State Department of Health Services grant program. Also involved are the State University at Fresno and the engineering firm EnvirOzone, the city's consultants. Although the deadline for submitting this year's grant proposal is the end of November, I was recently asked if Santa Barbara might like to join. As I understand the grant program, there would be about $600,000 for research and design. If you want to get a leg up on Prop 128, I think this might be an avenue worth pursuing.

MUNICIPAL WELLS AND DRINKING WATER

2-6 Sanger also has municipal wells that are contaminated with chemicals. Sanger is cleaning up its contaminated municipal wells through the same consulting firm and with the same type of ozone technology that it and Turlock are using for waste water treatment. Sanger's wells are contaminated with an agricultural chemical, Santa Barbara's with dry cleaning fluid. Santa Barbara still blends its contaminated well water with other water to supply us with that which we drink. Sanger has shut its wells off until they are corrected (Sanger is also not in a drought).

Although the practice of blending contaminated wells meets minimal standards, the State is currently rethinking this posture.

2-6 I think you can see that there are available avenues to review this city's water problems. The opportunity to obtain some first class input from the people at Sanger and their consultants should not be overlooked. I am told that one of the objectives in the Sanger project through its grant is the development of a showcase, enabling other districts to come and view the technology.

Thank you for taking your time to read this. I hope that I have inspired sufficent interest to continue the discussion and develop a dialogue. Much of the "why we are where we are" also relates to policy and the blend of policy and technology. Policy is a favorite subject of mine. A related topic for discussion, and one that excites Dr. Edward Crowther, is entitled "Beyond State Water." Beyond State Water involves our analysis of HOW the sudden availability of a previously scarce and critical resource may affect life styles and the local community. The Chamber of Commerce, in its Water Advisory Task Force of which I was a member, took us to but not beyond State Water. The WATF was a success, especially in demonstrating that a diverse group can

2-7 focus on a controversial subject.

The topic Beyond State Water is neither an academic approach nor is it meant to be esoteric. It is a critical ingredient to our next step in development. It is a forward looking approach, an approach similar to Risk Analysis, as used by the World Bank. Risk analysis also focuses on institutional capacity and adequacy of policy. Having worked for the Bank, I think this type of analyses are a must if one is to review the various avenues of maximizing resource utilization. I feel that it is important to preplan and assure adequacy in policy before new water or any other previously short resource becomes abundant. It matters not from where the water comes, but that there will be water. We must plan now for its proper use.

Sincerely,

Edward McGowan, PhD
1005 Tunnel Rd.
Santa Barbara, CA

25 October, 1990

Response 2-1: Comment noted. The potential need for compliance with hazardous material related regulations including Article 80 of the Uniform Fire Code and Assembly Bill 3777 (as amended) regarding Acutely Hazardous Materials (e.g., chlorine and sulfur dioxide)/Risk Management Prevention Program requirements are recognized in the DEIR, including Table 2-2. Sulfur dioxide (SO_2) is no longer proposed for use for the desalination project, but instead will be replaced by sodium metabisulfite which is not gaseous or acutely/extremely hazardous. The proposed desalination project will require neither a modification or an expansion of the existing chlorine facilities at the El Estero WWTP and/or Wastewater Reclamation Plant, and no increase in the volume of chlorine stored is necessary or proposed. As stated in the DEIR, the requirements of Article 80 and AB 3777 (as amended) will be complied with, as applicable.

Response 2-2: Comment noted. The use of chlorine for disinfection of municipal water supplies is the most common and accepted method currently utilized in the United States. Refer to Response 9-7 for more information

Response 2-3: Comment noted. Ozonation (versus chlorination) of the El Estero WWTP effluent is not directly relevant to the proposed desalination project.

Response 2-4: Comments noted.

Response 2-5: Comments noted.

Response 2-6: Comments noted.

Response 2-7: Comments noted.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
300 S. Ferry Street
Terminal Island, CA 90731

January 9, 1991 F/SWR13:JJS

RECEIVED

JAN 11 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

Mr. Mitch Oshinsky
Principal Planner
City of Santa Barbara
630 Garden Street
Santa Barbara, CA 93102

Dear Mr. Oshinsky:

3-1 On December 4, 1990, I met with representatives from the City of Santa Barbara, Ionics Incorporated, and the consultant who prepared the Draft Environmental Impact Report (DEIR) for the "City of Santa Barbara's and Ionics, Incorporated,s Temporary Emergency Desalination Project". Based upon the information provided at that meeting, and the data included in the DEIR for the project, I have concluded that the project should have no significant impacts on the resources for which the National Marine Fisheries Service has a responsibility.

I have no additional comments to offer on the document, and expect a favorable review the Corps of Engineers permit for the project when it becomes available.

Sincerely,

James J. Slawson

James J. Slawson
Chief, Habitat Conservation
Branch

Response 3-1: Comments noted.

January 11, 1991

12o Cedar Lane
Santa Barbara, CA 93108

RECEIVED

JAN 14 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

City of Santa Barbara
Planning Department
630 Garden St.
Santa Barbara, CA 93102
Attn: Mitch Oshinsky, Principal Planner

Re: Draft EIR - Desalinization Project

Dear Mr. Oshinsky:

I have just reviewed subject draft EIR for the City of Santa Barbara and Ionics Desalinization Project prepared by Woodward-Clyde dated December 20, 1990. Please enter the following comments into the record and provide me with a written response.

4-1 **Economic Analysis, Section 6.0** - The information provided is not an economic analysis in any sense. It is a recitation of past and present water rates. What are the costs to plan, build, operate and maintain the plant for the various outputs? How will the project be financed? Does it require a bond issue and vote of the residents? What happens after five years, will the plant be mothballed? What will be the cost of progressive and preventative maintenance for the operating and standby modes. What is the cost of this project as compared to the alternatives. There is a myriad of questions that need to be answered in an economic analysis, not the least of which is the true cost to residents. I suggest that the consultant and city have failed to comply with the provisions of CEQA and must provide a complete economic review of the project.

4-2 **Alternative Assessment, Section 7.0** - This entire section is incomplete. According to CEQA you must describe alternatives to the project in detail. To provide one short paragraph on enlargement of Cachuma and another on state water is ludicrous.

4-3 During my professional career I have reviewed and participated in the preparation of a number of complex and controversial EIRs. I have never seen a document with such sketchy and glossed over information in these two important sections previously discussed.

I shall look forward to a response.

Very truly yours,

P. C. Beautrow

Phil Beautrow, Registered Civil
Engineer 13057

Response 4-1: Section 15131 of the California Environmental Quality Act (CEQA) states that "Economic or social information may be included in an EIR or may be presented in whatever form the agency desires. (a) Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may..."

Although CEQA does not require inclusion of an economic analysis in an EIR, the City as Lead Agency chose to include a brief economic analysis as presented in Section 6.0 of the EIR. Economic information is also presented in the Council Agenda Report in Appendix D of the EIR. For more information regarding the economic aspects of the desalination project, refer to the public record for this project including the Agreement for the Privatization of Water Supplies Between the City of Santa Barbara and Ionics, Inc. (dated September 18, 1990).

Response 4-2: As discussed in Section 7.0 of the EIR, the City has considered numerous options for obtaining the basic objective of supplying a temporary emergency water supply of up to 10,000 AFY by early 1992. Alternatives considered include alternate sources of water, and alternate facility technological designs and locations. The only alternative to desalination that has been identified which could potentially supply up to 10,000 AFY of water by early 1992 is water tankering from western Canada. This alternative was examined in detail by the City Alternative Water Supply Review Panel, ERC, and City Council and was determined to be less desirable by the City than desalination for various reasons including potential environmental effects; potential difficulty in receiving necessary approvals; and the higher cost of delivered water (versus desalination). The proposed desalination project is considered to be the environmentally superior alternative for obtaining the basic objective as stated above.

As discussed in the EIR (Section 7.2.4), the potential enlargement of Lake Cachuma is not an alternative to the proposed desalination project because it is not capable of meeting the basic objective of being on line by early 1992 and supplying approximately 5000 AFY of water to the City of Santa Barbara. This project could potentially provide up to 3000 AFY to the City if it is approved, constructed <u>and</u> sufficient inflow occurs; it is currently expected that this alternative could be available no earlier than 1995 and probably not until 2000. Enlargement of Lake Cachuma is not a viable solution to the current drought emergency.

Likewise, State water via a new pipeline to Lake Cachuma is not an alternative to the proposed temporary emergency desalination project since it is incapable of meeting the

project objectives. The City of Santa Barbara's State water allotment (assuming it is available) is only 3000 AFY and it is currently expected that this potential source of water could be available no earlier than 1995 and maybe not until 2000. The State water option cannot meet the proposed objective of delivered water quantity (5000 AFY for the City) being on line by early 1992, thus it is not a feasible alternative to the proposed temporary emergency desalination project.

Refer to Response 8-1 for more information regarding the assessment of alternatives.

Response 4-3: Comment noted.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GEORGE DEUKMEJIAN, Governo

DEPARTMENT OF TRANSPORTATION
P.O. BOX 8114
SAN LUIS OBISPO, CA 93403-8114
TELEPHONE: (805) 549-3111
TDD (805) 549-3259

RECEIVED

JAN 14 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

January 11, 1991

5-SB-101/225-
13.1/5.5
Desalination Project
DEIR SCH# 9010859

Mitch H. Oshinsky
City of Santa Barbara
630 Garden Street
Santa Barbara, CA 93102

Dear Mr. Oshinsky:

Caltrans District 5 staff has reviewed the above-referenced document. The following comments were generated as a result of the review:

An encroachment permit must be obtained before any work can be conducted within the Caltrans right-of-way. Please be advised that, prior to obtaining an encroachment permit, you are required to have design plans approved by this office and an approved
5-1 environmental document. Should you have further questions regarding encroachment permits, please contact Steve Senet, Permits Engineer, at (805) 549-3152.

Please send us a copy of the Final Environmental Impact Report when it is available. Thank you for the opportunity to comment.

If you have further questions, please contact me at (805) 549-3139.

S J Chesebro

Sarah J. Chesebro
District 5
Intergovernmental Review Coordinator

Response 5-1: Comments noted. CalTrans District 5 will be provided with a copy of the Final EIR. No intrusive work such as excavations are proposed in any CalTrans rights-of-way, although the proposed desalination project does include the insertion of a polyethylene sleeve under Cabrillo Boulevard within the City's existing unused outfall line right of way easement.

DEPARTMENT OF HEALTH SERVICES
Office of Drinking Water
P.O. Box 4339
Santa Barbara, CA 93140-4339
(805) 963-8616

RECEIVED

JAN 14 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

January 11, 1991

City of Santa Barbara
Water Department
Mr. Mitch Oshinsky
P.O. Box 1990
630 Garden Street
Santa Barbara, CA 93102

Attention: Mr. Mitch H. Oshinsky
Principal Planner

Gentlemen:

System No. 42-010

Subject: Temporary Emergency Desalination Project
SCH No. 9010859

The Department has reviewed the subject environmental document and offers the following comments.

6-1 The City of Santa Barbara will need to obtain an amended domestic water permit from the State Department of Health Services for proposed desalination treatment plant. Permit application forms were given to the city personnel at our recent meeting with the City and Ionics. Plans and specifications for the treatment plant will need to be submitted to the State Department of Health Services, Santa Barbara District Office for our review and approval prior to construction. The proposed desalination treatment plant will utilize the existing abandoned sewage outfall line with an intake located about 2400 feet off shore. The outfall will be lined as part of the project. The intake structure will extend above the ocean bottom. The treatment plant will include pre disinfection, filtration, reverse osmosis, and post disinfection treatment.

6-2 The treatment facility will need to comply with the proposed California Surface Water Treatment Rule, which requires both filtration removal and disinfection inactivation to achieve a total pathogen reduction of (Giardia - 3 log or 99.9% and virus - 4 log or 99.99%). Disinfection inactivation must be based on CT values which are given in the SWTR guideline document. The desalination process is considered alternative filtration technology and must achieve at least 2 log Giardia filtration removal. Higher removal credit can be demonstrated. The remaining 1 log, or at least a minimum 1/2 log if higher removal credit is demonstrated, must be achieved by disinfection. Adequate disinfection will need

to be provided before the water is delivered to consumers. Adequate CT values may be achieved by chlorine contact or using a faster acting disinfectant such as ozone. The proposed treatment facility will need to be evaluated by a registered Civil Engineer experienced in water treatment for

6-3 its compliance with the Surface Water Treatment Rule. His evaluation will need to be submitted to this office.

The treatment plant operators must be certified to comply with Regulations for Certification of Water Treatment Plant

6-4 Operators. Adequate cross connection control and water and sewer line separation must be provided.

The treatment plant operation will be monitored using a continuous conductivity analyzer. Complete chemical analyses will need to be made at least quarterly. Other

6-5 parameters such as bacteria, turbidity, chlorine residuals, PH, etc, will need to be made on a daily or hourly basis. The City will need to submit a monthly report to the State Department of Health Services on the treatment plant operation by the 10th of each month.

Please contact this office at 805-963-8616 if you have any further questions.

Sincerely,

John Curphey

John N. Curphey, P.E.
District Engineer

cc: Office of Drinking Water
Santa Barbara County Environmental Health

C:SBEIR191.DOC

Response 6-1: Comment noted. The City and Ionics will comply with all standard State Department of Health Services permit requirements.

Response 6-2: Comment noted.

Response 6-3: Comment noted.

Response 6-4: Comment noted.

Response 6-5: Comment noted.

Rod Sumner & Associates

32 W. Anapamu, #291
Santa Barbara, CA 93101
805-964-8132 - Voice
805-967-9805 - FAX

January 14, 1991

7-1 My concerns with the proposed Desalination plant are in three areas. First, how will the desalted water quality affect the city's quality in general, and the chloride and sodium levels in particular? Second, how will those changes affect the quality of the reclaimed water supply, since the City's water plan requires reclaimed water use for landscape purposes to free up additional potable water? Third, how well do the specs reflect known changes in the E.P.A. requirements for potable water, and will we meet those requirements?

7-2 My fear is that staff, in their hurry to prepare bid documents, looked at the alternative water supplies strictly along human consumption and current allowable water quality regulations. Other uses for this potable water (watering of indoor and outdoor plants that may be extremely sensitive to chlorides) were not considered. In addition, after this water has been used how will it affect our ability to sell it for landscape purposes, when it becomes "reclaimed" water.

On May 3, 1990 City Staff prepared a response to Stage III drought, and projected water demand to be 16,200 acre feet, with existing sources being able to produce 8,615 acre feet for a shortfall of 7,585 acre feet (47%). The water sources are a Cachuma allotment of 4,215 acre feet, 1100 acre feet Cachuma water carry over, Mission Tunnel producing 400 acre feet, 300 acre feet are from Montecito, and 2600 acre feet from ground water. Of this 8,615 acre feet supply, Cachuma provides over <u>60 per cent</u>.

Lets look at the quality of existing sources for next year. One can only hope our ground water basins to produce at best, the same quality that it is currently producing. I think the quality is questionable due to increased salt water intrusion, can we know for sure? Cachuma cannot be expected to provide us with water, period. Therefore, we shouldn't count on it being a source.

Since Desalinated water will replace Cachuma water, let's compare Cachuma water with desalinated water.

Using this E.I.R. for Desal quality, and the City of Santa Barbara Annual Water Quality Report for 1989 to reflect Cachuma quality.

Comparison of the water quality at the source:

Chemical	Units	Maximum Contaminant Level	Ground Water	DeSal Water	Surface Water
Chloride	ppm	500	61-222	163-230	19-32
Sodium	ppm	None	46-92	96-135	56-61
TDS		1000	460-1072	284-400	624-896

The World Health Organization sets the following standards for Potable Water Supplies, and are generally accepted standards. They are:

Substance or property mg/L	High class Water	WHO Highest desirable concentration	Generally attainable standard	WHO Maximum permissible concentration
Total dissolved solids (TDS)	300	500	1000	1500
Chloride	100	200	450	600

This is of interest when you realize that before 1982, California required the total dissolved solids in public water supplies meet standards of 500 ppm. In 1982 there was a temporary degradation of this to 1000 ppm . . . there were five communities in the State that could not meet the 500 ppm requirement. Last year,
7-2 the standard was again temporarily relaxed to 1250 ppm. Santa Barbara and Goleta were among those communities that made necessary the degradation of these standards.

Looking at table 2-9 of the E.I.R., we do meet the highest desirable concentrations for T.D.S., we fall below that for chloride concentrations, but still maintain a relatively high water quality. . . for human consumption. But how does this affect the water for our house plants? For that matter, how about our landscape? This brings us to water requirements for landscape and the effect of desal water on our water reclamation program, since we have to replace potable water for this use.

Using guidelines from Irrigation with Reclaimed Municipal Wastewater, A Guidance Manual - CA. State Water Resources Control Board, we have the following information.

Potential Irrigation problem	Units	Degree of restriction on use		
		None	slight to moderate	Severe
Chloride	mg/L			
surface irrig.		<140	140-350	>350
sprinkler irr.		<100	>100	

The footnotes to this chart are interesting!

e. Most tree crops and woody ornamental are sensitive to sodium and chloride. . .

f. With overhead sprinkler irrigation and low humidity (<30%), sodium or chloride greater than 70 or 100 mg/L, respectively, have resulted in excessive leaf absorption and crop damage to sensitive crops. . .

It appears that we will produce desalinated water that is harmful to plants. And, depending on the final mix of water, we could be producing potable water that should have restricted use on landscapes. How we use our water should be an item of choice, not something forced upon us due to its quality or lack of quality.

One last table, and this deals with our current reclaimed water quality. From the Monthly summary of reclaimed water effluent, City of Santa Barbara, Public Works Department, El Estero Wastewater Treatment Plant:

Element	Jan	Feb	Mar	Aprl	May	June	July	Aug
T.D.S. mg/L	1337	1368	1348	1324	1276	1344	1370	1424
Chloride mg/L	471	518	453	482	432	436	502	392

7-2

In general, Chloride levels range between 450 and 500 mg/L for our reclaimed water. However, in a couple instances, they exceeded 500. These levels are toxic to most plants. I need not remind you have the uproar from our golfing community, and how dead greens dried up golf course revenues. Where does the salt come from, and knowing the negative impacts of high concentrations of salt in our reclaimed water, what's going to happen to our potable water when we add desal and no longer have a lake Cachuma to buffer it?

It is assumed that the typical mineral pickup resulting from domestic water use will increase chloride levels from 20 to 50 mg/L, <u>excluding</u> the addition from home <u>water</u> <u>softeners</u>. Other sources are from the City's wells, some have considerable salt water intrusion . . . some have been shutdown, others continue to pump. What are those levels? Why aren't these factors included when we go to analyze the impacts of the desal plant? The numbers are available (the plant sensitivity information to chlorides) before decisions on a temporary desal plant are made, (much less a permanent facility) we should know those numbers and have the answers so we know what we are getting into.

Now that you've become number numb, you should be able to see a problem here. We've not looked at the water supply situation in light of Cachuma not being able to provide water! To assume

Cachuma dries up was a necessary factor in deciding how large a desal plant to build, why not make the same assumption when assessing the City's water quality?

If we assume that desal will make up half our water supply (rather than 60% that Cachuma now provides) what plants will that kill? Or better yet, what plants will we need to buy bottled
7-2 water for?

If our long range water plans require the use of reclaimed water for potable water, what crops can use this reclaimed water if we double or triple the salt content of reclaimed water . . . or maybe we should ask, by how much will we increase the chloride content of our reclaimed water if we use desal water that produces this much chloride in our potable water.

From a human health issue I refer you to two pages in the E.I.R. Pages 2-46 under section 2.7 FINISHED WATER QUALITY

"Total Trihalomethane Formation Potential not to exceed 100 parts per billion (ppb) at the point of interconnection with the City main on Yanonali Street."

The Environmental Protection Agency is going to be restricting this current allowable level by half or one fourth. This will
7-3 happen in June of 1993. That one of these two levels will be picked has been agreed upon by the water technicians I've talked with, and in the water journals I've read, and that it will happen in the middle of 1993 is also generally accepted. How will this impact our Desal plant? Should we anticipate additional costs down the road? I THINK WE ARE BEING MISLEAD BY THE E.I.R. STATEMENT, AT THE LEAST.

For my last comment I refer you to pages 3-77 & 78. I don't know what sodium sensitive people are restricted to. I do know that
7-4 in Goleta Water District, where sodium levels are 50.1-55.6, dialysis patients are warned. Since the Desal water is at three times this level, will the City's combined water be at a range of 50% higher, or could it actually double when Cachuma dries up?

In summary:
I think from a short term planning basis, and even on a long term basis, the City of Santa Barbara has been playing political football with our water. Even as we approach a disaster in the coming year, they are not being prudent, but rather political. Granted, we have made our bed, and now we must lie in it . . .
7-5 but must the elected politicians continue to short sheet it?

In addition, this E.I.R. is for a temporary plant only! Granted, this is an emergency, and to qualify as such, the desal plant must be a temporary structure. However, with the City Council's vote to proceed with DeSal as the only new permanent source of water, we must look at this plant as one that will be permanent.

7-6 We must not allow a technicality to get in the way of reality! I would like to see this E.I.R. expanded to cover permanent use of this plant.

I think the questions I've raised must be answered before we continue. Granted this was the cheapest water alternative, but does it provide us with water we can live with?

Response 7-1: The estimated finished quality of the product water from the desalination facility is discussed in Section 2.7. It is compared to State water quality standards for various constituents in Table 2-9, to the City's traditional surface and groundwater supplies for various constituents in Table 3.7-1, and to the City's traditional water supplies specifically for chloride and sodium in Table 3.7.2. As indicated by these data, desalinated water will have slightly higher chloride and sodium levels than current potable water supplies. This will result in only minor effects on the most sensitive plants.

With respect to potential effects on reclaimed water quality, the desalinated water will have lower (324 - 456) total dissolved solids (TDS) than the City's current water supplies (460 to 1072), therefore, the input water received by the wastewater reclamation facility and the resultant reclaimed water will have slightly lower TDS levels. Currently, reclaimed water contains about 1500 ppm of TDS. The desalinated water will be "softer" than current water supplies and the likely reduction in the use of water softeners is expected to help reduce chloride levels in the reclaimed water. The chloride levels in the desalinated water (163 to 230 ppm) will meet all State, health and aesthetic requirements (250 ppm recommended secondary standard), although levels will in many cases be higher than levels in the City's current water supplies (19-222 ppm). The slightly higher chloride levels in RO will result in slightly higher chloride levels in the reclaimed water. The net change in chloride levels in reclaimed water will be minor (currently 450-500 ppm). The sodium levels in the desalinated water (96-135 ppm) will be higher than the City's current water supplies (46-92 ppm). There is no State standard for sodium. Currently the sodium level in reclaimed water is 250 to 300 ppm. The use of reclaimed water is already restricted to vegetation which is tolerant of higher chloride and sodium levels, therefore adverse effects are not expected.

Potential forthcoming changes in U.S. Environmental Protection Agency (EPA) regulations governing "potable water" are not specified or available yet, but it is currently expected that they will pertain primarily to trihalomethanes (THMs). Existing and/or possible future State and Federal water quality regulations will be met as stipulated in the EIR.

Response 7-2: Assuming Lake Cachuma dries up and is temporarily unavailable as a water supply to the City, the water from the desalination facility will replace water which was previously supplied by Lake Cachuma. The predicted chloride levels for the desalinated water are higher than the City's traditional surface water supplies which include Lake Cachuma, but

the maximum predicted chloride levels (163-230 ppm) for the desalinated water are similar to the City's groundwater supplies (19-222 ppm) and are less than 50 percent of the maximum contaminant level (500 ppm) for potable water supplies. The State Department of Health Services recommended Maximum Contaminant Level (MCL) for chloride is 250 ppm. TDS and hardness levels in the desalinated water will be much lower than the City's traditional surface and groundwater supplies, thereby limiting salt contributed by water softeners which ends up in the City's reclaimed water supply.

Potential concerns regarding effects on irrigated crops are minimized due to the facts that the desalinated water will be mixed with other supplies (e.g., groundwater) and that there is very little irrigated cropland in the City of Santa Barbara. If other nearby communities participate in the desalination project, they will also be mixing the desalinated water with other supplies. Agricultural users of desalinated water as well as people with chloride sensitive house plants might need to evaluate whether the water may be unacceptable for their intended use. Currently, some of the City's groundwater supplies have similar chloride levels. Goleta's groundwater supplies exceed the levels of chlorides, sodium, and TDS (42-319 ppm, 60-172 ppm, and 72-1800 ppm, respectively) of that to be produced by the desalination plant.

As the area's traditional surface and groundwater supplies diminish, the potential for economic impacts due to loss of sensitive crops may increase. In general, trees are expected to survive while sensitive houseplants may be impacted. No significant adverse biological impacts are expected because commercial crops and houseplants are not native, rare or endangered. If the drought continues and the traditional surface and groundwater sources diminish, it is considered highly likely that use of potable water supplies for crop irrigation and/or watering of plants will become a very low priority use.

Response 7-3: Recent information from the Environmental Protection Agency indicates that they are currently considering changing the MCL for total trihalomethanes (TTHMs) to a value between 50-100 ppb. Ionics estimates that they will produce water with 25 ppb (or less) of TTHMs. Refer to Response 9-7 for more information.

Response 7-4: As listed in Table 3.7-3, it is recommended that "sodium sensitive" individuals be limited to less than 2 grams of sodium per day. As listed in Tables 3.7-1 and 3.7-2 of the EIR, the desalinated water is predicted to range in concentration of sodium from 111-150 ppm. The City's traditional groundwater supplies ranged from 46-92 ppm of sodium in 1989,

while surface water supplies ranged from 19 to 222 ppm (refer to Table 3.7-1 in the EIR). Certain sodium sensitive individuals, including dialysis patients, may wish to consult their physicians as recommended in Section 3.7.3.2 of the EIR. It is considered likely that such individuals already have made special arrangements for drinking water considering the sodium levels in the City's traditional supplies.

Response 7-5: Comments noted.

Response 7-6: Several commentors suggest that the analysis is inadequate in the consideration of long-term impacts and long-term alternatives. These comments are based on an assertion that the project is or will become a permanent water supply, in contrast to what is stated in the project description, and that the City should fully analyze the impacts of and alternatives to a permanent water supply project. However, the record of this project and the contemporaneous record of the City's recent deliberations on long-term water supply issues supports, rather than undermines, the City's definition of this project as a temporary emergency project and the clear distinction between these supply development efforts.

The City has by necessity and by design drawn a clear distinction between the temporary emergency water supply project analyzed in this EIR and any long-term water supply which will be developed pursuant to the Long Term Water Supply Program under consideration by the City Council. It has been explicitly acknowledged since the inception of the emergency water supply project that the timing and operational requirements of the emergency project were incompatible with the analysis and review required for a long-term water supply project (see for example, Council Agenda Report regarding Emergency Declaration Due to Drought Conditions, dated May 11, 1990). Yet, it was recognized that both emergency and long term water needs were critical issues which needed to be addressed. The resolution of this dilemma was a dual track approach under which a temporary emergency project would move forward on an expedited schedule while the analysis of long-term alternatives proceeded more slowly, given the complexities and requirements of that undertaking. The temporary, five year life of the emergency project is defined in all of the permit applications for the project, including those to the California Coastal Commission and the U.S. Army Corps of Engineers.

The application of this dual track approach to the environmental review process was incorporated in the Council's definition of the emergency project for purposes of environmental review (Council Action on Temporary Alternative Water Supply on August

14, 1990) and in the Environmental Review Committees's approval of the Initial Study (SB-106-90) describing the temporary, five year life of this project and scoping the issues for analysis in this EIR. One commentor (Environmental Defense Center, 8/24/90) raised the question of long-term impacts in comments on the Initial Study. To address these concerns in the EIR, a summary discussion of impacts from extended operation in the event the drought continues beyond five years from early 1992 was included in the document (Section 4.3). In addition, because these scoping comments suggested that there remained confusion as to the distinction between the emergency project and the long-term project and how or when use of the emergency project would be terminated, language was included in the project description in the EIR defining the water shortage conditions under which the emergency project would be allowed to operate (see Section 2.1). The document also describes the modular, portable nature of the reverse osmosis equipment. This feature was important in the selection of the project (See Appendix D). It allows both rapid installation, meeting the timeliness requirements of the emergency condition, and ease of relocation or removal, recognizing the temporary nature of the project. Abandonment procedures are described in Section 2.8.

As noted by several commentors, the City Council recently has identified desalination as their preferred long-term water supply alternative, after several months of review of technical studies of the City's long term water needs and alternatives. This is a conceptual action, identifying the elements of an entire long-term water supply program. The formal adoption of the program, let alone the elements of that program, cannot occur until environmental review has been conducted. City staff has recommended an implementation schedule for the long term water supply program, including environmental review. The proposed schedule anticipates the preparation of a programmatic EIR, to be completed by the summer of 1992. Further project specific environmental review would also be required. The level and scope of environmental review will be defined by the City's Environmental Review Committee.

The analysis of desalination as a long-term alternative in the Long Term Water Supply Alternative Analysis explicitly acknowledged that criteria for selection of a long-term project would be different than those for a temporary project. More importantly, the desalination alternative, as discussed in that analysis, specifically included a range of possible alternatives within that option which must be further evaluated before selecting a project for implementation. These include alternate desalination technologies, alternate sites, co-generation options, and regional options.

Because of the broad range of alternatives for a long-term desalination project, including options affecting the size, location, and operation, it is not possible to analyze potential environmental impacts at this time. If this particular facility were selected as the preferred long term project, additional analysis of long-term criteria could result in changes to type of power generation, desired salt removal efficiency, extent of regional participation, aesthetics or other project characteristics. Potentially significant impact areas identified through the Initial Study for this temporary desalination facility would be expected to also be of concern for a long-term desalination project, including geology and soils, water, plant life, animal life, noise, risk of upset, human health, visual, recreation, and cultural resources. In addition, as noted by several commentors, additional potentially significant impacts for a long-term project might include energy consumption and growth inducement. These potentially significant impact areas also were identified in the programmatic EIR certified for the City's Five Year Water Policy and Action Plan (SB-127-87) in the assessment of desalination as a long-term water supply source. Thus, while it is possible to suggest the types of environmental impacts which would need to be analyzed for a long-term desalination project, there is not enough information available at this time to analyze project-specific impacts.

Separating the temporary project from the long-term project broadens the scope of the alternatives analysis which can be conducted for the long-term project. If the temporary project and the long-term project were one and the same, the alternatives analysis would be limited to those alternatives which could meet the timeliness requirements of the emergency project, i.e. to be on-line by early 1992. By distinguishing the long-term project as a separate project, the long-term alternatives analysis can include projects such as the Coastal Aqueduct, the enlargement of Lake Cachuma, and expanded use of reclaimed water. These projects have implementation schedules which preclude their consideration as emergency projects even though they have been recognized as potential long term water supply alternatives. Some commentors suggest that the City is attempting to avoid or subvert the environmental review process by considering this project as a temporary emergency project. Quite the reverse is true. Separating the emergency project from the long-term water supply project preserves a meaningful role for the alternatives analysis in the environmental review process for the long-term project.

The community as a whole and all interested parties are generally educated regarding alternative water supplies and their associated impacts. This awareness has resulted in part from the effort during the past year by the City to identify drought emergency supplies, as

well as to consider long-term supplies. Under these circumstances, high standards for complete environmental review will be upheld for any long-term water supply project, including any potential conversion of the proposed emergency project.

Thus there is no basis for the commentors' assertions that this analysis is intended to substitute for an analysis of a long-term project. The City Council and Environmental Review Committee have clearly established a record requiring further substantive environmental review for any long-term project. Adequate safeguards are in place in the project description to ensure that any conversion of this project to a long-term project would be subject to complete environmental review and permitting.

COMMENTS TO THE

DRAFT ENVIRONMENTAL IMPACT REPORT

FOR THE

CITY OF SANTA BARBARA AND IONICS, INC.

"TEMPORARY EMERGENCY"

DESALINATION PROJECT

TO THE

CITY OF SANTA BARBARA

ENVIRONMENTAL REVIEW COMMITTEE

BY

DR. JOHN I. BAUM, D.ENV.

15 JANUARY 1991

CEQA REQUIREMENT TO EVALUATE FEASIBLE ALTERNATIVES

CEQA explicitly states that it is the policy of the state to:

> "Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs and to consider alternatives to proposed actions affecting the environment" (CEQA, Section 21000).

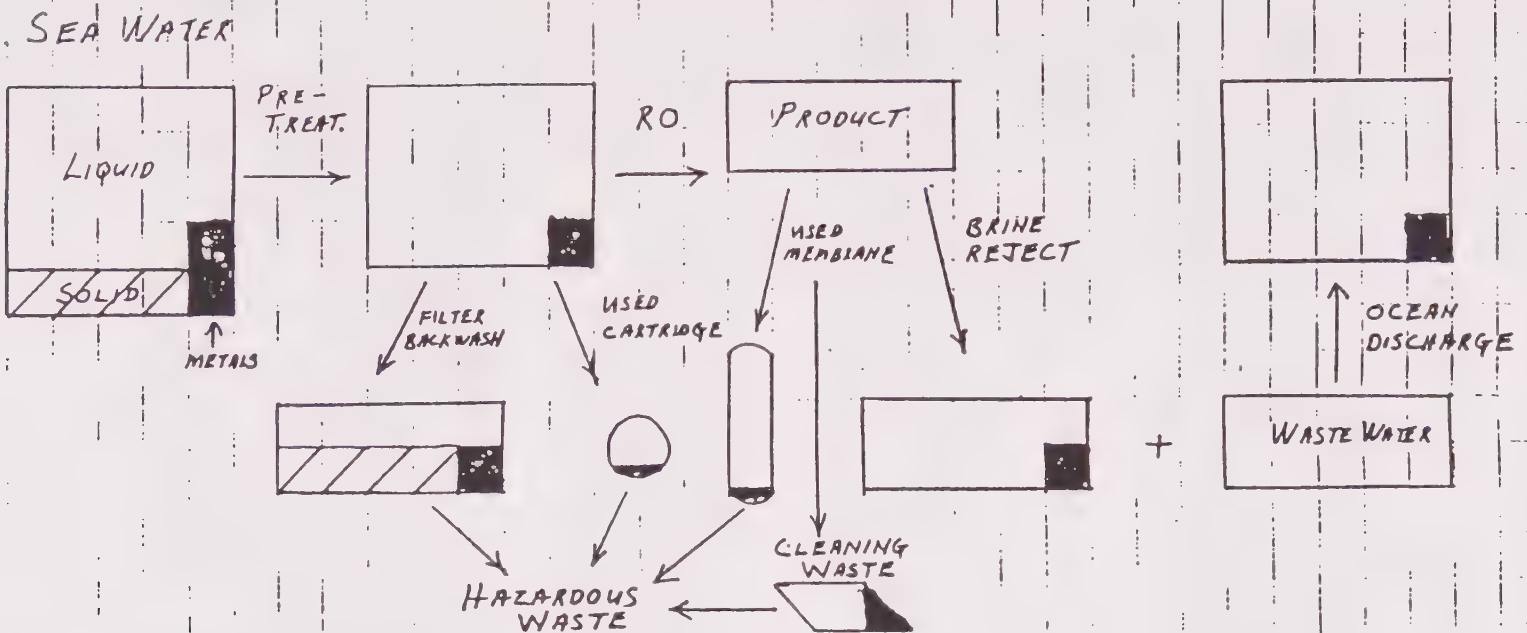
Furthermore, the state's Guidelines for CEQA requires the EIR to:

> "Describe a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives
> 8-1 of the project and evaluate the comparative merits of the alternatives" (CEQA Guidelines, Section 15126 (d)).

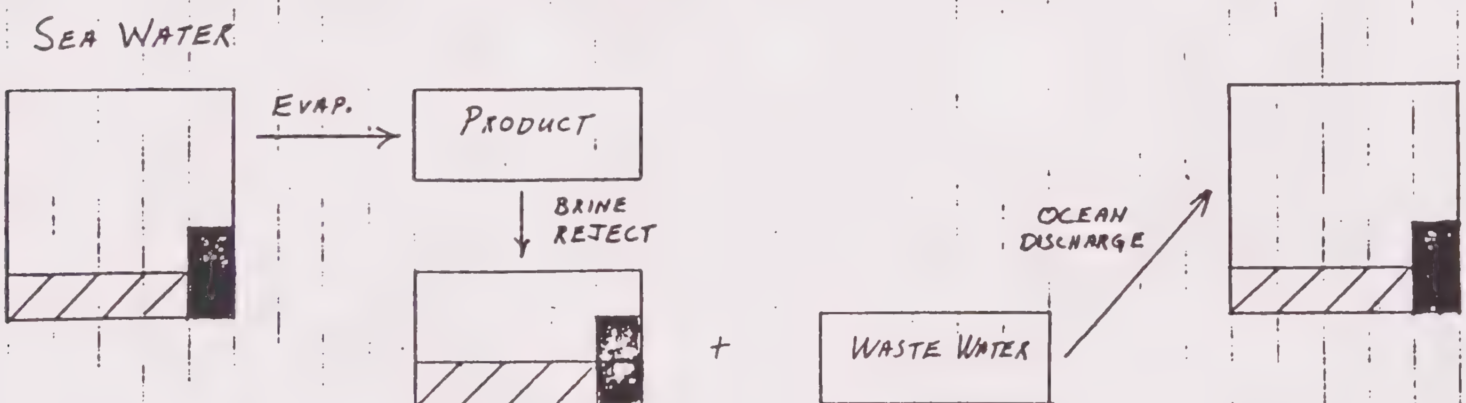
> "The discussion of alternatives shall focus on alternatives capable of eliminating any significance, even if these alternatives would impede to some degree the attainment of the project objective, or would be more costly" (CEQA Guidelines, Section 15126 (d)(3)).

The City and Ionics, Incorporated (the "Applicants") have a public duty and legal obligation to fully evaluate and inform the public of alternatives which would avoid or substantially reduce significant adverse environmental impacts. While the Draft EIR did acknowledge that Low Temperature-Mechanical Vapor Compression (LT-MVC) distillation was a feasible alternative, it was inadequate in stating the environmental benefits. This analysis of distillation is especially significant since it is the "environmentally superior alternative".

Reverse Osmosis



Distillation



ANALYSIS OF SANTA BARBARA OCEAN WATER[a]

Heavy Metal (detect limit	Sea Water (mg/l)	Sediment (mg/kg)
Nickel	ND	9
Selenium	ND	ND
Thallium	ND	ND
Mercury	0.9	ND
Lead	0.55[b]	6.9
Cadmium	0.04	ND
Chromium	0.06	10
Arsenic	ND	1.5
Zinc	0.12	4.3
Cooper	0.06	0.8
Antimony	0.78	14
Beryllium	ND	ND
Silver	0.03	0.1

8-2 [a]Source: Woodward-Clyde Consultants, "City of Santa Barbara Emergency Water Supply Project: Analytical Laboratory Results for Water Quality and Sediment Samples Obtained on July 26, 1990 in Study Area South of Stearns Wharf" (August 22, 1990).

CALIFORNIA HAZARDOUS WASTE CRITERA
(CCR Title 22, Article 11)

	TTLC[a] (mg/l)	STLC[b] (mg/kg)
antimony	500	15
arsenic	500	5
barium	10,000	100
beryllium	75	0.75
cadmium	100	1
chromium	2,500	560
chromium IV	500	5
cobalt	8,000	80
copper	2,500	25
fluoride salts	18,000	180
lead	1,000	5
mercury	20	0.2
molybdenum	3,500	350
nickel	2,000	20
selenium	100	1
silver	500	5
thallium	700	7
vanadium	2,400	24
zinc	5,000	250

[a] Total Threshold Limit Value
[b] Soluble Threshold Limit Concentration, using the California Waste Extraction Test (WET)

COMPARISON OF CHEMICAL USAGE OF DESALINATION ALTERNATIVES

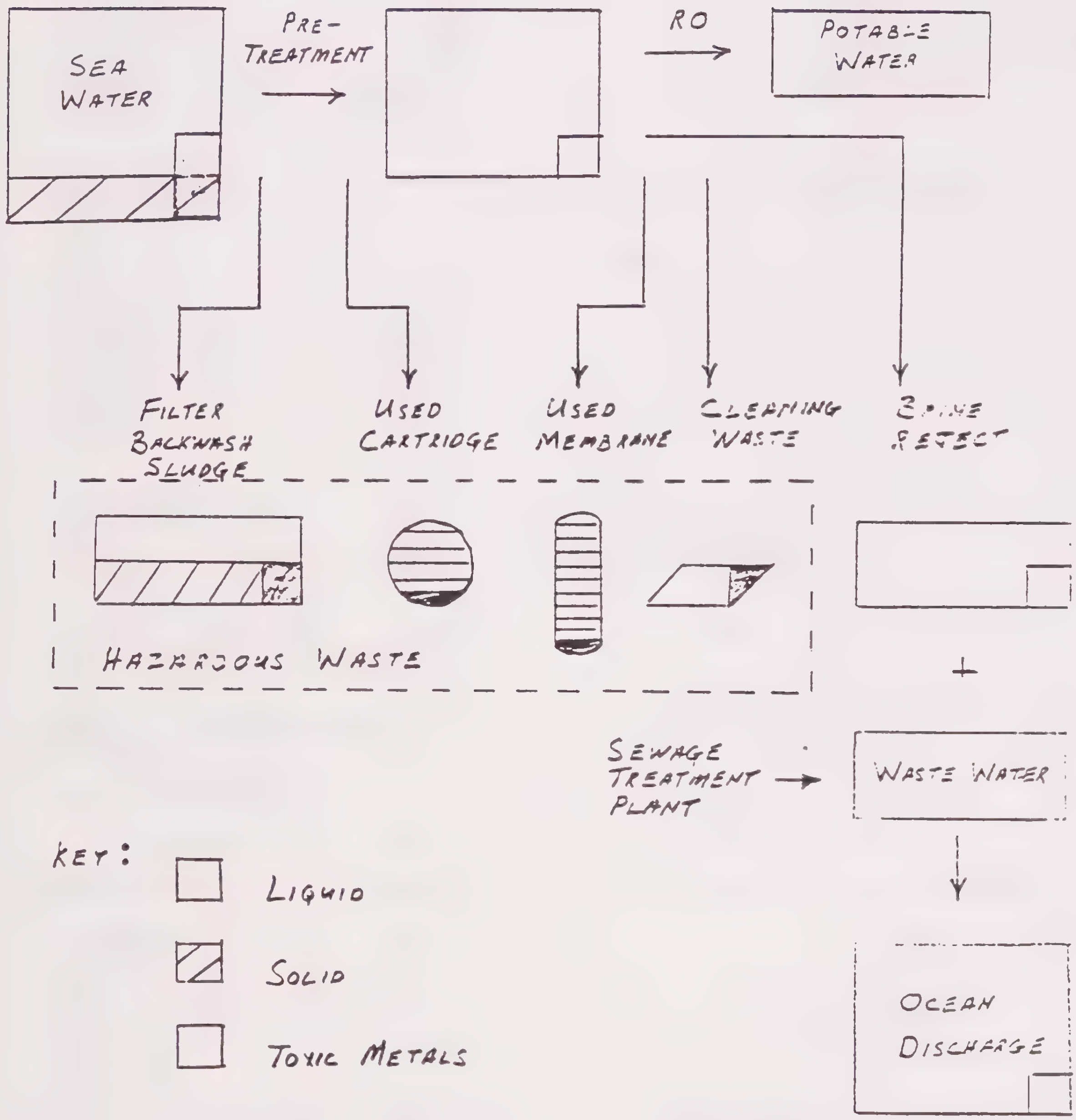
	Hazard Rating[a]	Toxic[b]	Haz[c]	Extrmly Haz[d]	GENE-TOX[e]	DOT[f]
REVERSE OSMOSIS						
Pre-Treatment						
chlorine	3	X	X	X		X
sulfur dioxide	3	X		X	X	X
ferric choride	3	X	X		X	X
carbon dioxide	1	X				X
polyelectrolyte	D					
Cleaning						
sodium EDTA	3	X				
sodium DSS[g]	3	X				
STP	3	X	X			
TSP	2	X	X			X
hydrochloric acid	3	X	X	X	X	X
citric acid	3	X	X			
sodium hypochlorite	3	X	X		X	X
alkalies	D					
surfactant	3	X				
Storage						
propylene glycol	3	X			X	
glycerine	2	X				
sodium bisulfite	3	X	X			X
Post-Treatment						
sodium hydroxide	3	X	X		X	
zinc orthophosphate	?					
chlorine	3	X	X	X		X
DISTILLATION						
Pre-Treatment						
polyelectrolyte	D					
Cleaning						
sulfamic acid	3	X				X
Storage						
(none)						
Post-Treatment						
soda ash	3	X			X	
chlorine	3	X	X	X		X

[a]Hazard Rating: 3=high, 2=medium, 1=low, and D=unclassified (Ref.12)
[b]EPA Toxic Substances Control Act
[c]EPA Superfund (CERCLA) - hazardous substance
[d]EPA Extremely Hazardous Substance List (SARA Title III. Sec.204)
[e]EPA Genetic Toxicology Program (GENE-TOX) - mutagenic
[f]Dept. of Transportation - hazardous material
[g]National Toxicology Program - carcinogenetic

ENVIRONEMTAL COMPARISON OF SEA WATER REVERSE OSMOSIS WITH LOW-TEMPERATURE MECHANICAL VAPOR COMPRESSION DISTILLATION

	SWRO	LT-MVC
<u>Feedwater Standards</u>	intolerant	tolerant
• solids	<0.0004 in.	<0.25 in.
• bio-organisms	none	N/A
• oxidants	none	N/A
• oil & grease	none	N/A
• iron (as ferrous)	<0.05 ppm	N/A
• pH	acidic	normal
<u>Chemical Usage</u> (tons/year) 10,000 acre-ft/yr facility	substantial	minimal
• sea water pre-treat.		
- chlorine (gas)	188	0
- ferric chloride	803	0
- anti-scalent	88	0
- sulfur dioxide (gas)	159	0
- carbon dioxide (gas)	604	0
- polyelectrolyte	80	112
• product water treatment		
- sodium hydroxide	734	0
- sodium carbonate	0	40
- zinc orthophosphate	174	0
- chlorine	14	14
sub-total	2,844	166
• process cleaning		
- RO membrane sltn.	(not provided)	N/A
- sulfamic acid	0	11
• long-term standby (per event)		
- sodium bisulfite	438	0
<u>Water Quality (ppm)</u> 19°C	marginal	excellent
• TDS	456	50
• sodium	150	15
• potassium	7	0.6
• magnesium	8	1.8
• chloride	230	28
<u>Potential Carcinogens</u>	yes	no
<u>Noise (dBa at 5 ft.)</u>	90-100	70-80
<u>Process Energy (kWh/1,000 gal)</u>	20 (w/recovery)	30
<u>Aesthetics</u>	comparable	comparable

SIMPLIFIED SCHEMATIC OF SEA WATER REVERSE OSMOSIS WASTE STREAMS



Response 8-1: Comments noted. The EIR does describe a range of reasonable alternatives to the proposed project in Section 7.0. Refer to Responses 4-2 and 9-2 for more information regarding the scope of the alternatives analysis. The alternatives analysis presented in the EIR was prepared in compliance with the requirements of CEQA. As paraphrased by the commentor, CEQA stipulates (Section 15126 [d][3]) that "The discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse effects or reduce them to a level of insignificance..." The EIR does not predict any unavoidable significant adverse effects for the proposed project, and the proposed project has been identified in the alternatives discussion as the environmentally superior alternative.

The detailed assessment of other potential short-term emergency water supply projects by the City Alternative Water Supply Review Panel, ERC, and the City Council concluded with the selection of the Ionics proposal as the preferred project based on environmental, economic, and other factors. Low temperature - mechanical vapor compression (LT-MVC) distillation was determined to be feasible during the alternate water supply selection process, but LT-MVC as proposed was not determined to be environmentally superior to Ionics' reverse osmosis desalination proposal.

Appendix D of the EIR presents the City Council Agenda Report (August 3, 1990) from the Alternative Water Supply Review Panel regarding "Selection of a Preferred Alternative Water Supply." As discussed in Appendix D, the LT-MVC distillation project which was proposed by Israel Desalination Engineering (IDE)/Ambient Technologies, Inc. (ATI) was determined by the City to be less desirable from an environmental standpoint in several areas including:

- Energy usage (up to 50% more than that required by the Ionics proposal);

- Visual resources (related to large offshore caisson/clarifier intake structure, and to larger, taller and more industrial appearing onshore desalination facilities when compared to Ionics' proposal);

- Recreation (related to negative effects on fishing/recreation associated with the large caisson proposed to be constructed off the end of Stearns Wharf which is a popular fishing and tourist area); and

- Marine life and aquatic biology (related to amount of offshore seafloor disturbance associated with caisson and subsea pipelines in previously undisturbed areas).

CEQA requires that the analysis of alternatives be based on reasonable alternatives capable of meeting the objectives of the project. For that reason, the alternative offered to the City by the commentor was analyzed. Some of the negative aspects of the LT-MVC project proposed by IDE/ATI could be likely avoided if the intake design currently proposed by Ionics was utilized instead. Even if it is assumed that the new intake design could be adapted to the LT-MVC project, there would still be uncertainty regarding where the proposed caisson/clarifier structure could be located and how clarifier sludge would be disposed of. Assuming the Ionics' intake design which utilizes the City's abandoned outfall line was adapted to the IDE/ATI LT-MVC project, some negative offshore impacts could likely be avoided, but the greater energy usage and onshore visual impacts (compared to the Ionics proposal) could not. Refer to Section 7.2.3 and Appendix D of the EIR for more information.

Response 8-2: Comments noted. The reverse osmosis desalination project proposed by Ionics involves the use of various water treatment chemicals which are commonly used at water treatment facilities. All chemicals would be used in accordance with the strict regulations that control hazardous material transport, storage, use, and disposal.

The primary chemical of potential concern is chlorine which will be obtained from the existing chlorine facilities at the El Estero WWTP/Wastewater Reclamation Facility. Chlorine will be obtained in dilute aqueous solution (0.3 %), and no additional chlorine storage will be required. Design refinements that have been performed by Ionics since the DEIR was issued have resulted in several changes in chemical use which will further reduce potential hazards associated with chemical usage. Ionics no longer proposes to use sulfur dioxide (replaced with sodium metabisulfite) or sodium dodecylsulfate. Compliance with applicable regulations including DOT transport requirements, Article 80 of the Uniform Fire Code, Assembly Bill 3777 (as amended) regarding Acutely Hazardous Materials compliance/Risk Management Prevention Program, and other hazardous material related regulations is expected to reduce risk associated with chemical usage to acceptable levels and no significant effects are expected.

DR. JOHN I. BAUM, D.ENV.
2107 MOUNTAIN AVE.
SANTA BARBARA, CA 93101

18 January 1991

City of Santa Barbara
Environmental Review Committee
630 Garden Street
Santa Barbara, CA 93102-1990

RE: Comments to the Draft Environmental Impact Report for Ionics, Incorporated's Proposed Reverse Osmosis Desalination Project (State Clearinghouse No. 99010859).

Dear Members of the Environmental Review Committee:

9-1 First I would like to commend the Applicant for acknowledging some of the comments which were made to the Notice of Preparation (NOP), such as, locating the sea water intake in deeper water, and adding a clarifier and dewatering press for removing solids from the filter backwash. Unfortunately, most of the comments I submitted on September 4, 1990 in response to the NOP were not addressed in the Draft EIR. There are several areas of "significant environmental impact" which were not fully addressed by the Draft EIR which needs to be considered before approving the Proposed Reverse Osmosis (RO) Project.

9-2 <u>The City of Santa Barbara and Ionics, Incorporated (the "Applicants") have a public duty and legal obligation to fully evaluate and inform the public and local decision makers of alternatives which would avoid or substantially reduce significant adverse environmental impacts.</u> While the Draft EIR did acknowledge that Low Temperature-Mechanical Vapor Compression (LT-MVC) distillation was a feasible alternative, it was inadequate in stating the environmental benefits.

The focus of the comments presented in response to the Applicants' Draft EIR is to clarify the significant adverse environmental impacts of the Proposed RO Project and demonstrate that LT-MVC distillation is a feasible, environmentally superior project alternative (refer to the attached table).

9-3 <u>Sea Water Intake</u> - The RO facility is very sensitive to feedwater quality, consequently an elaborate pre-treatment system must be used to remove solids, bio-organisms, oxidants, oil and grease. This is actually the Achilles heel of the RO process, since any failure to remove any of these materials, for any reason, will result in catastrophic failure of the RO membrane system. For example, an oil spill in the Santa Barbara Channel would render the RO system inoperable. Distillation, however, is an evaporative process which is tolerant to feedwater quality.

9-4 <u>Chemical Usage</u> - The Proposed RO Project will use about 1.5 tons per day of chemicals. Almost all of the 19 chemicals the RO plant will use are considered hazardous by the U.S. EPA and Department of Transportation. Potential hazards include toxic and fatal exposure to gases, chemicals which are known carcinogens and mutagens, and chemicals which are combustible and potentially explosive. While the Draft EIR presumes that all chemicals will be handled in a safe and proper manner, the EIR should acknowledge that given the large quantity of hazardous chemicals transported, stored and handled, and the numerous means for accidental releases, such as human error (transfer or truck spills) and natural disaster (earthquake, flood, or fire), a degree off risk will exist despite all potential mitigation efforts. In contrast, the LT-MVC distillation process would use only 4 chemicals which represents about 5 percent of the total quantity of chemicals used by the Proposed RO Project.

9-5 <u>Hazardous Waste</u> - The Proposed RO Project will concentrate toxic heavy metals from the ocean in the solids removed from the filter backwash, the cartridge filters, RO membranes and cleaning waste. Approximately, 280 to 1,400 cubic yards of hazardous solid waste will need to be disposed annually, which will require almost daily truck loads to remove the hazardous waste generated by the Proposed RO Project from the City. Also, there will be hazardous liquid waste generated from the cleaning of the RO membranes. The exact quantity of liquid waste generated is not known since usage information was not provided in the Draft EIR. The Draft EIR did not acknowledge that this waste would be hazardous, and did not address how this hazardous waste would be handled and disposed. The LT-MVC distillation process, however, would not generate any solid or liquid waste requiring either treatment or disposal off site.

9-6 Water Quality - While the Proposed RO Project will meet current minimum drinking water quality standards, the water quality is significantly poorer than the water which would be produced by a distillation facility. The levels of sodium, potassium and chlorides produced by the Proposed RO Project are significantly greater than current City water. These elevated levels would impact human health by increasing cardiovascular and kidney problems. Also, the chloride levels of the Proposed RO Project, which are over 10 times greater than water from Lake Cachuma, will significantly impact plant life and would seriously jeopardize the potential use of reclaimed water for turf irrigation. Distillation, however, produces an excellent water quality, which would enhance the quality of water in the City.

9-7 Potential Carcinogens - The Proposed RO Project will use chlorine to disinfect the sea water to avoid biofouling of the RO membranes. It is well known that chlorine will readily react with chlorides and bromides in the sea water to form a variety of carcinogenic compounds known as trihalometanes (THMs). Once the THMs are formed they are capable of passing through the RO membranes and entering the product drinking water. Also, the Proposed RO Project will be using sodium dodecylsulfate as one of the RO cleaning chemicals. This chemical is on the National Toxicology Program's list of suspected carcinogens. The handling and disposal of this carcinogen was not addressed in the Draft EIR. The distillation process does not use or generate any carcinogenic substances.

9-8 Noise - The high pressure pumps of the RO process are inherently louder than the LT-MVC distillation process. Many incorrectly believe that the mechanical vapor compressor of the distillation unit is noisy. Actually, it emits very little noise since it discharges into a vacuum.

9-9 Process Energy - The Proposed RO Project, which will be using an energy recovery turbine, will use about 50 percent less energy than the LT-MVC distillation process. Energy usage of the distillation process could be substantially reduced if power were cogenerated onsite, so both electrical power and by-product heat could be used more efficiently.

9-10 Aesthetics - The distillation facilities have been described by the City staff as a large industrial facility. And while a distillation plant may be slightly higher than the Proposed RO Project it will also occupy significantly less space. No views will be obstructed by either type of desalination plant and architecturally compatible screening can be used as necessary for either plant. Furthermore, if the height of the distillation plant is still viewed as a concern it could be easily mitigated by lowering the facilities foundation below grade.

9-11 Project Life - The distillation technology is a more mature technology which was specifically designed for desalinating sea water. Furthermore, distillation is inherently simpler to operate and maintain. Consequently, distillation projects have a longer useful life (i.e., 30 years for a distillation plant vs. 20 years for a sea water reverse osmosis). Even the City's Review Panel acknowledged that the LT-MVC distillation has a longer useful life then RO.

9-12 Cost - The Draft EIR incorrectly alleges that potable water from the Proposed RO Project costs less than LT-MVC distillation. While a distillation plant has a higher initial capital cost than RO, it also has a lower operating and maintenance cost. Based on a lifecycle cost analysis, the LT-MVC distillation facility would produce water for less than the Proposed RO Project.

9-13a The City Council has recently decided that desalination would be the City's long-term water supply alternative. Therefore, whatever project is installed as the "emergency temporary" desalination facility will certainly be the City's "permanent" facility. It would be inappropriate, therefore, to narrowly define the Proposed Project in order to minimize the evaluation of impacts and alternatives. The EIR for the desalination project should consider a full evaluation of the long-term impacts of the Proposed Project and all feasible alternatives which could meet the City's objectives for providing emergency and permanent potable water.
9-13b Given the significant adverse environmental impacts of the Proposed RO Project, it would be prudent to consider LT-MVC distillation as a viable alternative. I strongly suggest that the Environmental Review Committee fully consider the benefits of distillation before making a final decision.

Respectfully,

John Baum

John Baum, D.Env.

ENVIRONEMTAL COMPARISON OF SEA WATER REVERSE OSMOSIS WITH LOW-TEMPERATURE MECHANICAL VAPOR COMPRESSION DISTILLATION

	Sea Water RO	LT-MVC Distillation
Feedwater Standards	intolerant	tolerant
• solids	<0.0004 in.	<0.25 in.
• bio-organisms	none	N/A
• oxidants	none	N/A
• oil & grease	none	N/A
• iron (as ferrous)	<0.05 ppm	N/A
• pH	acidic	normal
Chemical Usage (tons/year) 10,000 acre-ft/yr facility	substantial	minimal
• sea water pre-treat.		
- chlorine (gas)	188	0
- ferric chloride	803	0
- anti-scalent	88	0
- sulfur dioxide (gas)	159	0
- carbon dioxide (gas)	604	0
- polyelectrolyte	80	112
• product water treatment		
- sodium hydroxide	734	0
- sodium carbonate	0	40
- zinc orthophosphate	174	0
- chlorine	14	14
sub-total	2,844	166
• process cleaning		
- RO membrane sltn.	(not provided)	N/A
- sulfamic acid	0	11
• long-term standby (per event)		
- sodium bisulfite	438	0
Hazardous Solid Waste (yd^3/year)	1,470 to 7,850	0
Hazardous Liquid Waste (gal/yr)	(not provided)	0
Water Quality (ppm) 19°C	marginal	excellent
• TDS	456	50
• sodium	150	15
• potassium	7	0.6
• magnesium	8	1.8
• chloride	230	28
Potential Carcinogens	yes	no
Noise (dBa at 5 ft.)	90-100	70-80
Process Energy (kWh/1,000 gal)	20 (w/recovery)	30
Aesthetics	comparable	comparable

COMMENTS TO DRAFT EIR FOR CITY OF SANTA BARBARA'S AND IONICS, INCORPORATED'S TEMPORARY EMERGENCY DESALINATION PROJECT

CEQA COMPLIANCE

The importance of properly preparing an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) can not be understated. The City of Santa Barbara (the "City"), which has established high standards for protecting our community's environment, should set an example for preparing a full and complete EIR. CEQA explicitly states that it is the policy of the state to:

> 9-15 "Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs and to consider alternatives to proposed actions affecting the environment" (Ref. 1, Section 21000).

Furthermore, the state's Guidelines for CEQA requires the EIR to:

> "Describe a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project and evaluate the comparative merits of the alternatives" (Ref. 2, Section 15126 (d)).

> "The discussion of alternatives shall focus on alternatives capable of eliminating any significance, even if these alternatives would impede to some degree the attainment of the project objective, or would be more costly" (Ref. 2, Section 15126 (d)(3)).

RESPONSE TO NOTICE OF PREPARATION

9-16 Detailed comments were formerly submitted to the City on September 4, 1990 in response to the Notice of Preparation of an Environmental Impact Report for the Proposed Ionics Reverse Osmosis Desalination Project (SB-106-90) (the "NOP"). Since the majority of the comments made to the NOP were not addressed in the Draft EIR the comments are included again (refer to Attachment A). The following is a summary of the original comments, which have been revised to reflect issues either addressed or not addressed in the Draft EIR.

TECHNICAL CONSIDERATIONS

Sea Water Intake:

9-17 The Applicant has revised the Proposed Project to put the sea water intake in deeper water, which will avoid the impacts of using Stearns Wharf and reduce silt and sand loading.

Solids Removal and Disposal:

The Applicant has revised the Proposed Project to include a
9-18 backwash clarifier and dewatering filter press. However, the Draft EIR has not addressed the following issues:

- **No reference on quantity and concentration of potentially hazardous solid waste from clarified and dewatered backwash solids, used cartridge filters, and used RO membranes.**

According to an analysis of sea water and ocean sediment taken by the Applicant's consultant the following heavy metals have been detected in the vicinity of the proposed sea water intake:

	Heavy Metal (detect limit)	Sea Water (mg/l)	Sediment (mg/kg)
	Nickel	ND	9
	Selenium	ND	ND
	Thallium	ND	ND
	Mercury	0.9	ND
	Lead	0.55[a]	6.9
	Cadmium	0.04	ND
9-19	Chromium	0.06	10
	Arsenic	ND	1.5
	Zinc	0.12	4.3
	Cooper	0.06	0.8
	Antimony	0.78	14
	Beryllium	ND	ND
	Silver	0.03	0.1

(Ref. 3, Tables 1 and 2, samples W1 and S1)

[a]Ionics asserts that the lead content should be 0.005 mg/l, however the Draft EIR did not explain the discrepancy with Woodward-Clyde's analysis (DEIR Tables 3.3-1 through 6). (Note: This discrepancy is significant since it would impact the El Estero waste discharge permit limitations.)

While toxicity of heavy metals may not be significant in low concentrations, they become extremely toxic at higher
9-20 concentrations. Reverse osmosis is a filtering process; large quantities of sea water are filtered first by multi-media filters, then by cartridge filters and finally by the RO

membranes. While these filters are effective in removing the heavy metals from the product water (permeate), they consequently concentrate heavy metals which will require disposal. Even toxins which are at non-detectable levels in the ocean can be concentrated to significant adverse levels by the proposed RO process.

Some of the heavy metals (and other toxins, such as pesticides) return to the sea in higher but acceptable concentrations as brine reject. The Proposed Project will be discharging the brine reject with the City's treated sewage, which will dilute the brine reject and sewage prior to being discharged to the ocean. The majority of the heavy metals which are in the suspended solids, however, will be concentrated in the solid waste generated from the filter backwash (75 percent according to the DEIR pg.2-38). Heavy metals and other toxins will also accumulate in the used filter cartridge and RO membranes which are routinely disposed. The most significant hazardous waste will be the spent liquid RO cleaning waste, which will contain elevated levels of heavy metals and toxic cleaning chemicals (refer to Figure 1).

According to California state law a waste material would be considered "hazardous" if the total or soluble concentration exceeds the following values (CCR Title 22, Article 11):

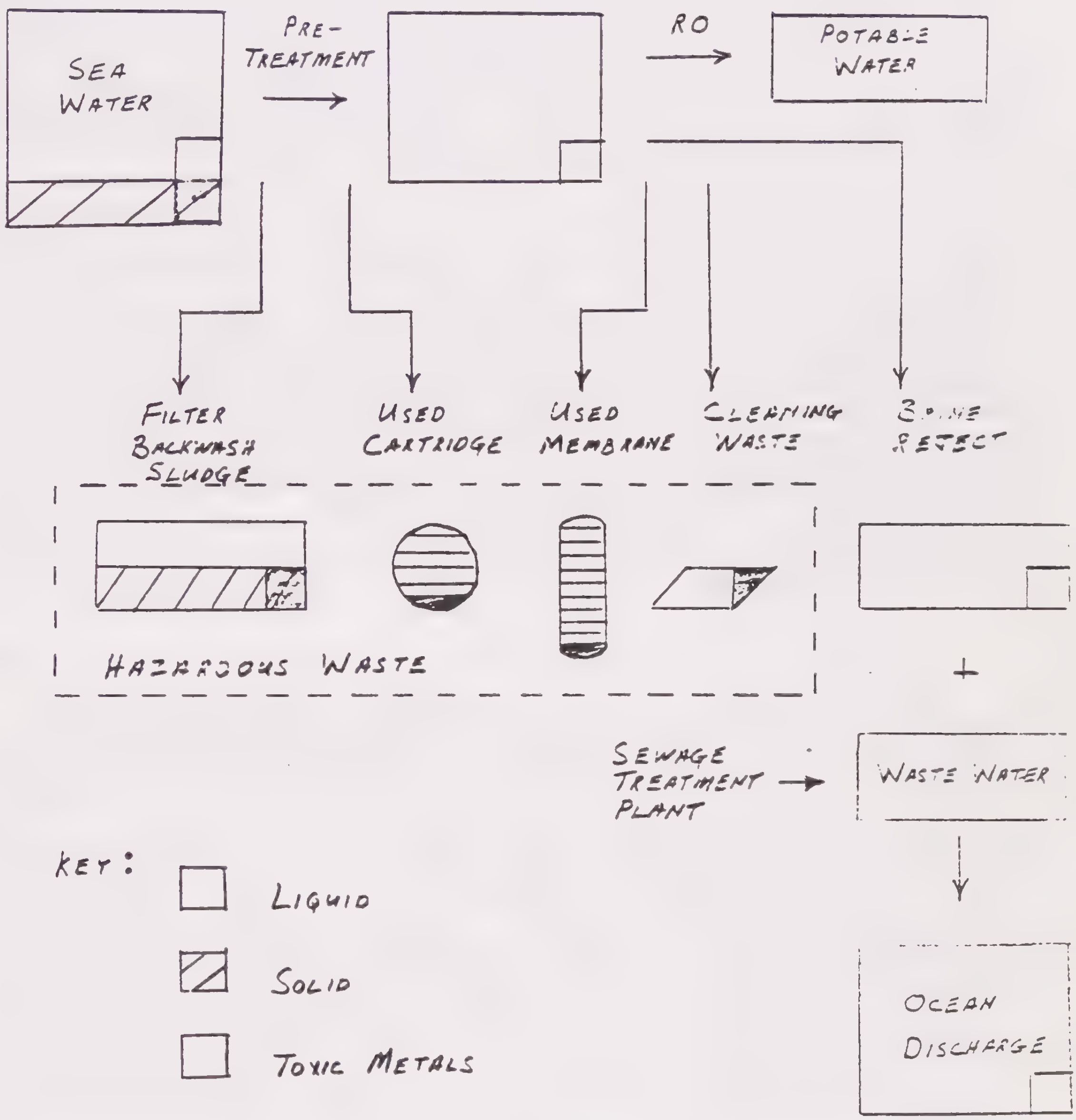
9-20

	TTLC[a] (mg/l)	STLC[b] (mg/kg)
antimony	500	15
arsenic	500	5
barium	10,000	100
beryllium	75	0.75
cadmium	100	1
chromium	2,500	560
chromium IV	500	5
cobalt	8,000	80
copper	2,500	25
fluoride salts	18,000	180
lead	1,000	5
mercury	20	0.2
molybdenum	3,500	350
nickel	2,000	20
selenium	100	1
silver	500	5
thallium	700	7
vanadium	2,400	24
zinc	5,000	250

[a] Total Threshold Limit Value
[b] Soluble Threshold Limit Concentration, using the California Waste Extraction Test (WET)

SIMPLIFIED SCHEMATIC OF SEA WATER REVERSE OSMOSIS WASTE STREAMS

9-20



9-20 The Draft EIR totally dismissed that there is a potentially significant adverse environmental effect associated with hazardous waste disposal; instead the Draft EIR states that "(n)one of the normal operation or maintenance streams are expected to be considered hazardous materials" (DEIR pg.3-24). Given the presence of persistent metals in sea water which will be concentrated in the Proposed RO Prject's solid and liquid waste, it is inconceivable that the DEIR does not consider the disposal of these waste streams as hazardous. Until the Applicant can prove that their solid and liquid waste are not hazardous, the waste can not be legally disposed as a non-hazardous waste (CCR Title 22, Chapter 30).

9-21 The quantity and method of solid waste is underestimated by the Draft EIR. The Draft EIR states that based on a suspended solid concentration of 10 to 50 mg/l the solid waste from the backwash would be between 1.7 to 5.1 cubic yards per day (DEIR pg.2-42). This estimate is actually low by more than a factor of four. Based on a 10,000 acre-feet per year Propose Project, with a normal sea water feedrate of 14,720 gallons per minute (Ref. 4, Process Flow Diagram #6142078), a density of solids being 1.1, 75 percent removal rate of backwash solids and a 50 percent moisture content of the solid waste slurry, the volume of backwash solids should be 4.3 to 21.5 cubic feet per day:

$$(10\ \text{mg}/10^6\ \text{mg})(14{,}720\ \text{gal/min})(1{,}440\ \text{min/day})(\text{ft}^3/7.48\ \text{gal}) \times (\text{liq}/1.1\ \text{solid})(0.75)(2)(\text{yd}^3/9\ \text{ft}^3) = 4.3\ \text{yd}^3/\text{day}$$

$$50\ \text{mg/l} = 5 \times 4.3 = 21.5\ \text{yd}^3/\text{day}$$

So instead of 1 to 2 trucks required per week as stated in the Draft EIR (DEIR pg.3-24), the Proposed RO Project will require 4 to 8 trucks per week to dispose of the solid waste (Note: the DEIR did not discuss the significance of transporting these hazardous solid wastes). In addition to the volume of backwash solids, the Draft EIR states that: "If any membrane elements fail during the project life, they will be .... disposed of in an approved manner" (DEIR pg. 2-42). The City's technical consultant has indicated that: "Typical annual replacement would be between 15 and 30 percent of the total (RO) system membrane volume (Ref 5, pg.1-21). The Draft EIR also indicates that cartridge filters would have to be replaced and disposed 3 to 4 times a year (DEIR pg. 2-40), but did not indicate the volume or method of disposal. As stated above it is extremely likely that the used RO membranes and cartridge filters would be considered hazardous solid waste.

Other comments submitted in the response to the NOP which were not discussed in the Draft EIR include:

- **Space requirements for the clarifier and dewatering filter press.**

The Applicant did not include the clarifier and dewatering filter press in the proposal accepted by the City (Ref. 4). The Applicant has already over utilized the original 1.5 acre site provided by the City adjacent to the El Estero Wastewater
9-22 Treatment Plant. The Applicant has not indicated the location, footprint area or height of the clarifier and dewatering filter press, or how it would look in the artist rendering. The City should be aware that these are sizeable pieces of equipment which can not be casually dismissed on a constrained parcel that has visual impact concerns. It is very likely that the inclusion of this critical equipment may preclude the ultimate capacity of the Proposed Project.

- **Availability of landfill space and disposal cost**

The Draft EIR has not indicated the availability of landfills to receive the Proposed Projects solid waste and how it may impact the lifetime of the landfill. Furthermore, under
9-23 state law unles the Applicant can prove that the project's solid waste is not hazardous, they can not use any Class III (non-hazardous) landfill (CCR Title 22, Chapter 30). The Applicant, therefore, can not consider using the Tajiguas landfill identified by the Draft EIR as the disposal site of the solid waste (DEIR pg.3-24). The Draft EIR, therefore, must identify either a Class I or II landfill to receive the non-classified solid waste.

<u>Chemical Usage and Disposal:</u>

The Draft EIR did indicate the type of RO cleaning chemicals and the type and quantity of "pickling" chemicals for standby. However, the following issues still have not been addressed by the Draft EIR:

- **The quantity of RO membrane cleaning chemicals and how they are used.**

While the Draft EIR did list the type of RO membrane
9-24 cleaners the Proposed Project will use, it did not indicate any quantities (DEIR Table 2-7). Given the potentially significant adverse impact associated with the chemical cleaning process (refer to the next section) it is critical that the Applicant discuss the likely range of chemical usage. The Draft EIR has indicated that there would be about 4 cleaning cycles per year (DEIR pg.2-39). This estimate appears rather conservative given that the City's technical consultant indicates that: "The typical cleaning frequency for a ... RO system may require between four and twelve cleanings (per year)" (Ref. 5, pg.1-22). Also, the Applicant did not explain the distinction of the

9-24 proposed cleaning system to the "Cleaning In Place" (CIP) system stated in their proposal to the City (Ref. 4, Section C (1) (F)). In addition to the actual usage of the cleaning chemicals, there will be a rather large usage of freshwater to rinse the membranes during the cleaning cycle. This will substantially increase the quantity of cleaning waste which ultimately must be treated and disposed.

- **The Draft EIR made no reference to the acute and chronic toxicity of the cleaning chemical waste.**

9-25 As previously indicated above there will be a substantial quantity of heavy metals and other toxins which will get concentrated on the RO membrane. Therefore, in addition to the toxicity of the cleaning chemicals, there will be a significant concentration of heavy metals and other toxins in the cleaning waste. The Draft EIR assumes that the cleaning waste will be treated by the municipal sewage system and states that: "Any cleaning compounds prohibited from discharge to the sewer by regulatory agencies will be handled separately and disposed of in an approved manner" (DEIR pg.2-45). Common logic and past experience indicate that the cleaning chemicals, in combination with the concentrated heavy metals and other toxins, will be a hazardous liquid waste. The Applicant should therefore treat the cleaning waste as a hazardous liquid waste, unless they can prove the waste will meet the stringent acute and chronic toxicity requirements of the "California Ocean Plan" (Ref. 6).

- **The Draft EIR did not indicate the potential hazards associated with all the chemicals used by the Proposed Project, such as providing Material Safety Data Sheets (MSDS).**

This request should be mandatory since the Applicant was required to furnish this information in order to satisfy the technical requirements of the City's Request for Proposal:

9-26

> "Define all proposed chemicals (hazardous and non-hazardous materials) to be used in the construction, operation, and maintenance of all facilities. Submit material handling sheets [i.e., MSDS] for all identified chemicals. Provide projected chemical consumption on a monthly basis." (Ref. 7, pg. 14).

Not only has the Applicant not provided all of this "required information" in their proposal to the City, they are now withholding this crucial information from the public during the CEQA review process.

The Draft EIR only considered 4 of the Proposed RO Project's chemicals to be hazardous (DEIR Table 3.6-1), however, actually almost all 19 chemicals will be used are considered hazardous.

The following Table indicates the degree of chemical hazard associate with the Applicant's proposed SWRO plant:

	Hazard Rating[a]	Toxic[b]	Haz[c]	Extrmly Haz[d]	GENE-TOX[e]	DOT[f]
REVERSE OSMOSIS						
Pre-Treatment						
chlorine	3	X	X	X		X
sulfur dioxide	3	X		X	X	X
ferric choride	3	X	X		X	X
carbon dioxide	1	X				X
polyelectrolyte	D					
Cleaning						
sodium EDTA	3	X				
sodium DSS[g]	3	X				
STP	3	X	X			
TSP	2	X	X			X
hydrochloric acid	3	X	X	X	X	X
citric acid	3	X	X			
sodium hypochlorite	3	X	X		X	X
alkalies	D					
surfactant	3	X				
Storage						
9-26 propylene glycol	3	X			X	
glycerine	2	X				
sodium bisulfite	3	X	X			X
Post-Treatment						
sodium hydroxide	3	X	X		X	
zinc orthophosphate	?					
chlorine	3	X	X	X		X

Note:
[a]Hazard Rating:3=high, 2=medium, 1=low, and D=unclassified (Ref.12)
[b]EPA Toxic Substances Control Act
[c]EPA Superfund (CERCLA) - hazardous substance
[d]EPA Extremely Hazardous Substance List (SARA Title III. Sec.204)
[e]EPA Genetic Toxicology Program (GENE-TOX) - mutagenic
[f]Dept. of Transportation - hazardous material
[g]National Toxicology Program - carcinogenetic

As can be seen from the proceeding Table the majority of the chemicals which will be used by the Applicant are considered hazardous by the U.S. Environmental Protection Agency and the U.S. Department of Transportation. Some of the hazardous properties include: fatal exposure (chlorine gas at 1,000 ppm and sulfur dioxide gas at 400-500 ppm), asphixant (carbon dioxide), corrosive (ferric chloride, sodium bisulfite, and hydrochloric

acid), exposive (anhydrous salt of sodium hypoclorite), combustible (propylene glycol and glycerine), and toxic emission when heated (sulfur dioxide, ferric chloride). One chemical (sodium dodecylsulfate) is even on the National Toxicology Program as a carcinogen (Ref. 12 and 13). While it is presumed that all chemicals will be handled in a safe and proper manner, the EIR should acknowledge that given the large quantity of hazardous chemicals transported, stored and handled, and the
9-26 numerous means for accidental releases, such as, human error (transfer or truck spills) and natural disaster (earthquake, flood, or fire) a degree of risk will exist despite all potential mitigation efforts. (Note: There was no information in the chemical references reviewed for sodium orthophosphate (Ref. 12, 13, and 14). The Applicant is requested to identify the proposed chemical by its Chemical Abstract Service number for evaluation.)

Sea Water Disinfection:

The formation of trihalomethanes (THMs) from the masive quantity chlorine disinfection of sea water (880 pounds per day of chlorine) is probably the most significant adverse environmental impact of the Proposed Project that the Applicant could completely mitigate by using an alternative method of disinfection. The Draft EIR did not address any of the following comments raised in response to the NOP:

- **The Draft EIR did not provide any documented evidence that the chlorine contact time of the Proposed Project would limit the formation of THMs to permissible levels.**

The Applicant has guaranteed that THMs level would meet
9-27 current State Drinking Water Quality Standards of 100 parts per billion (DEIR pg.2-46). Given that THM water quality standards are likely to be lowered to 25 ppb, what assurances are there that the Applicant will be able to guarantee compliance with new standards?

- **The Draft EIR did not indicate what safeguards would be provided to protect the drinking water supply from significant levels of THMs.**

THMs are potent carcinogens which are capable of passing through the RO membranes into the City's drinking water supply (Ref 5, pg.1-10). Even if the Applicant had a system designed to comply with the THM standards, the possibility exists for the system to fail (such as a failure in the dechlorination system), exposing the City's potable water supply to a potent carcinogen.

- **The Draft EIR did not indicate that there are alternatives available to mitigate the potentially significant adverse environmental impact.**

9-27 There are several feasible alternatives available for the Proposed Project to avoid the potential formation of THMs, such as using ultraviolet light. The Draft EIR should discuss the alternatives and justify what method is chosen.

- **The EIR needs to evaluate the environemtal impact of "shock chlorination" of the sea water intake system.**

9-28 The Applicant has indicated that they intend to chlorinate the sea water intake line with 150 pounds of chlorine gas per day to control biofouling (DEIR p.2-41 and 46). This method of "shock chlorination" was not addressed by the Draft EIR as a potentially significant environmental impact on the marine environment.

<u>Liquefaction:</u>

- 9-29 **The Draft EIR did not indicate the magnitude of building and equipment loads and what method would be used to ensure that the Proposed Project would be able to withstand the high liquefaction potential at the Proposed Site.**

<u>Water Quality:</u>

- **The Draft EIR did not include a human health risk and turf irrigation assessment of having higher concentrations of chloride, sodium and potassium.**

Many people are on sodium and potassium restricted diets which would be significantly impacted by the elevated levels in the Proposed Project. Also, many members of the public who are currently not experiencing any cardiovascular or kidney health problems, would be increasing the probability of problems from the elevated levels of sodium and potassium.

9-30

Plants are very sensitive to chlorides. The City has not considered that the Proposed RO Project may significantly adversely impact the City's Wastewater Reclamation Project, which is an integral part of the City's water management plan (DEIR pg. 7-20). Elevated levels of chlorides in the potable water system from the Proposed Project (10 times greater than Lake Cachuma water), will lead to elevated levels of chlorides in the sewer system, which will result in elevated levels in the City's reclamation project. The higher levels of chlorides in the reclaimed water will require more water to be use for irrigation and may ultimately destroy the soil.

9-31
- **The Draft EIR did not consider the mitigation measure for the Proposed RO Project adding a second RO membrane.**

It would be feasible for the Proposed Project to include a second stage RO membrane filter to improve water quality.

<u>System Performance and Energy Use:</u>

9-32
- **The Draft EIR did not provide degradation curves indicating the loss performance from either operating or having the RO membranes on standby, and the consequences of such degradation on energy use and production cost.**

Consistency With Local Plans and Policies:

- **The Draft EIR did not evaluate the consitency of the proposed project with the Santa Barbara County Hazardous Waste Management Plan (HWMP).**

9-33
It is the stated policy of the the HWMP that: "The County and cities shall work together to develop and implement programs that reduce the amount and hazard of the hazardous wastes generated in the County" (Ref. 15, p.ES-1). It is the policy of the HWMP that: "All businesses that generate hazardous wastes....shall provide the County with information regarding the type, amount and management of all hazardous wastes generated. Such information shall be required as part of the Environmental Health Division hazardous waste generator permit program and shall be updated annually." (Ref. 15, p.ES-5). The HWMP calls for a review of all new projects which generate hazardous waste. "Site specific information shall be used to evaluate the consistency of a proposed project with the siting criteria. <u>Consistency will be determined during the environmental review process</u>" [emphasis added] (Ref. 15, p.ES-7). The review process specifies the requirement of a risk assessment. "The purpose of the risk assessment is to estimate the level of risk to human health and the environment. <u>Sufficient detail should be provided so that decision-makers will have an adequate basis from which to consider alternatives</u>" [emphasis added] (Ref. 13, p.ES-8).

ALTERNATIVES

9-34
Like the requirement to describe mitigation measures within an EIR, the requirement to set forth project alternatives within the document is also crucial to CEQA's mandate that avoidable significant environmental damage be substantially lessened or avoided where feasible. A Draft EIR must describe a range of reasonable alternatives to the Proposed Project, or to its location, that could feasibly attain the project's basic objectives, and must evaluate the comparative merits of each alternative.

The City's Environmental Review Committee mandated "...that the project requires a discussion and evaluation of a range of reasonable alternatives which could feasibly attain the basic objectives of the project" (Ref. 8, pg.34). It is unconscionable that the Draft EIR limits a "discussion and evaluation" of the major alternative to the Proposed Project, namely LT-MVC distillation desalination, to the following statements (DEIR pg.7-24):

o Construction and operation of the distillation alternative are "very similar to an RO facility".

o Distillation use 50 percent more energy than (single pass) RO.

o The distillation alternative is "significantly taller than the proposed RO facility.

o The offshore intake/caisson with pumphouse "would detract from the character of Stearns Wharf and diminish ocean views".

o The delivered cost of water from distillation would cost
9-34 more than the proposed RO facility.

City staff commented during the Public Hearing on January 15, 1991 that the Review Panel's evaluation attached to the Draft EIR (Ref. 11) was to be considered as part of the environmental evaluation of alternatives. This commenter takes strong exception to the validity of the Review Panel's analysis as serving as a CEQA alternatives analysis. The Review Panel's report was hastily prepared and contains numerous inconsistencies which the Draft EIR should have evluated. Ambient Technologies, Inc. (ATI), which proposed a distillation system to the City, addressed most of the concerns with the Review Panel's Report (refer to Attachment B). Also, it has been pointed out that the majority of the environmental concerns of the City's Review Panel Report pertained to the intake/caisson which had nothing to do with the merits of the distillation process (refer to Attachment C).

The Draft EIR "discussion and evaluation" of distillation desalination is totally inadequate in providing the public and decision makers with sufficient information to reasonable evaluate the merits of the alternative.

The following discusses some of the numerous significant
9-35 environmental differences on how a LT-MVC distillation facility operates compared to the Applicant's Proposed RO Project:

1) The Draft EIR states that: "The primary risk of upset for
the proposed desalination project relates to the possible
release of hazardous chemicals in air or on land or water.
The chemicals of potential concern, based on their hazardous
nature and/or quantity involved, include chlorine, sulfur
dioxide, caustic soda (sodium hydroxide), ferric chloride,
and carbon dioxide" (DEIR pg.3-65). The Draft EIR further
states that these chemicals "will increase the probability
of an accident as well as the potential magnitude" (DEIR
pg.3-68). Overall, the Proposed RO Project will use 19
chemicals that total about 3,000 tons per year, most of
which are considered by the EPA and Department of
9-35 Transportation to be hazardous.

Except for chlorine used for post-treatment, the
distillation alternative would totally avoid the use of all
the hazardous chemicals used by the Proposed RO Project. The
only pre-treatment chemical the LT-MVC distillation facility
uses is an EPA approved polyelectrolyte anti-scalent.
Unlike the Applicant's project, chlorine will only be used
for post-treatment of the potable water. The Applicant will
use almost 15 times more chlorine for sea water disinfection
and shock chlorination. Overall, the distillation process
would use only about 5 percent of the total quantity of RO
chemicals.

2) The Proposed Project will generate potentially significant
hazardous solid waste from the backwash of the multimedia
9-36 filter, spent RO membranes and spent cartridge filters. The
distillation alternative does not generate any solid waste.

3) The Proposed Project will generate potentially significant
hazardous liquid waste from cleaning RO membranes and
"pickling" RO membranes while stored in standby. The
distillation alternative would not generate any liquid
waste. The LT-MVC distillation process only needs to clean
potential scaling of calcium carbonate with a mild sulfamic
9-37 acid about once a year. The reaction product is a non-
hazardous calcium sulfate salt which can be safely
discharged with the other salts in the brine reject. No
chemicals are used to maintain the distillation facility on
standby. The process of putting the distillation system on
either short-term or long-term standby simply involves
washing the primary vessel with fresh water.

4) The Proposed Project forms trihalomethanes, which are a
potent carcinogen. The distillation alternative does not
9-38 require any disinfection of the sea water, so there is no
potential for forming THMs.

5) The Proposed Project has elevated levels of chlorides,
9-39 sodium potassium which impacts human health, and turf

9-39 irrigation (directly and through concentrated levels in reclaimed water). The distillation alternative produces a superior water quality that is equivalent to natural rain. Instead of adversely impacting human health and turf irrigation, distillation would provide an overall benefit.

9-40 While it is true that distillation use approximately 50 percent more power than a single pass RO facility, the overall operating cost is less since the RO system has additional labor, chemical and waste disposal costs and most significantly the replacement of costly RO membranes. Also, putting the distillation power requirements in perspective, the 30 kWh per 1,000 gallons of product water produced is equivalent to a family which uses 6 HCF/month, operating a 200 watt light bulb.

9-41 It is true that the distillation alternative would be slightly higher than the proposed RO facility (30 vs. 20 feet high). However, the Draft EIR did not point out that the distillation alternative conversely requires a smaller area than the Proposed Project. Furthermore, if the height of the distillation facility were considered significant it could be reduce by lowering the foundation.

9-42 The offshore intake/caisson proposed by Ambient Technologies, Inc. (ATI) to the City for a LT-MVC distillation facility is totally a none issue. The distillation process is virtually insensitive to feedwater quality. The sea water intake which is presented in the Draft EIR for the Proposed Project (Note: which is completely different than the Applicant's original proposal to the City which took water in from directly underneath Stearn's Wharf) is more than adequate. This fact was presented to the City Council by ATI on August 5, 1990 (refer to Attachment B) and by this commenter on August 14, 1990 (refer to Attachment C).

9-43 While not a primary environmental concern, the Draft EIR implies that the distillation alternative was not considered due to a higher cost of delivered water. While it is true that the capital cost of a distillation process is greater than a single pass RO facility, the operating and maintenance costs are less. Based on a lifecyle cost analysis, ATI's distillation facility would be at least the same as the Proposed Project and most likely less depending on how long the RO membranes and high pressure pumps last and how much it will cost to dispose of hazardous solid and liquid waste (refer to Attachment B, Table 1). Also, the cost to maintain ATI's distillation system would be less than the Proposed RO Project, which is significant since it is anticipated that the desalination facility will not be operated during wet years (refer to Attachment B, Table 2).

The Draft EIR did consider numerous alternative sites, this author does not wish to make any comment regarding the suitability of any of the alternative sites.

Short-Term vs Long-Term:

9-44a The City's Environmental Review Committee required a mandatory finding of the question: "Does the project have the potential to achieve short-term, to the disadvantage of long-term goals?" (Ref. 8, pg.34). The short-term goal is to provide "temporary emergency" supplies of up to 10,000 AFY of water by early 1992 that would be available for up to 5 years. The long-term goal is provide a "permanent desalination project" which will reliably meet short falls between supplies and demands during future droughts (Ref. 9). Although the Proposed Project is presented as a "temporary 5 year project, the fact is that the City has contractual rights to either purchase for their own operation or renew the Applicant's Service Agreement beyond five years (DEIR pg.2-2). The City Council has already formally approved desalination as the City's new long-term water supply (December 18, 1990), based primarily on the fact that converting the emergency RO facility would be the least costly water supply (Ref. 10). The primary basis for the "converted emergency RO" facility being the least costly alternative is that the City assumes that all the original capital cost would already be fully paid! All indications are that the Proposed Project is intended to be not only the City's temporary emergency project but also its long-term permanent project. City Councilman Fairly eloquently described the situation by borrowing from a French saying that "There's nothing quite so permanent as a temporary arrangement."

9-44b The City should be aware that there is already case law rulings against a governmental body which tried to inadequately address alternatives in an EIR based on narrowly defining the projects objectives (City of Santee v. County of San Diego, 4th District, October 26, 1989). The county wanted to construct and operate a "temporary" detention facility, stating that it would not be used for more than seven years without additional CEQA review. The Court of Appeal discerned a reasonable probability that the detention facility would remain in existence for a substantially longer period.

The City's Review Panel has determined that distillation has a better long-term potential than RO (Ref. 11, pg. 17). It should be pointed out that the LT-MVC distillation system was considered the City's second choice out of 46 proposals as a "temporary" desalination facility, it was also acknowledged to be the best long-term desalination option. At the time of the City's decision in August 1990, however, the City asserted that they were only considering a temporary facility.

ECONOMIC CONSIDERATIONS

The Applicant has not indicated the cost impact of the following changes or issues:

- Cost savings for using the abandoned sewer outfall as an intake line instead of using Stearns Wharf.
- Verification that there will not be any cost increase to the City for the clarifier and dewatering filter press added to handle solids from the backwash of the multimedia filters.
- 9-45 Verification that there will not be any cost increase to the City for having to treat and/or dispose of solid or liquid waste (hazardous or non-hazardous).
- Verification that there will not be any cost increase to the City for additional power requirements to compensate for loss of membrane performance.
- Verification that no matter what power contract is signed with Southern California Edison, there will be no cost impact to the City.

REFERENCES

1. California Environmental Quality Act, State of California Public Resources Code Sections 21000-21177 (as amended January 1, 1990).

2. Guidelines for California Environmental Quality Act, State of California Administrative Code Title 14, Chapter 3, Sections 15000-15387 (as amended January 1, 1990).

3. Woodward-Clyde Consultants, "City of Santa Barbara Emergency Water Supply Project: Analytical Laboratory Results for Water Quality and Sediment Samples Obtained on July 26, 1990 in Study Area South of Stearns Wharf" (August 22, 1990).

4. Ionics, Incorporated, Second Submittal-Privatization of Alternative Water Supply (July 23, 1990).

5. Draft Technical Memorandum 1: Desalination Technology Alternatives Review. Update of 1989 Goleta Water District Seawater Desalination Feasibility Study (November 1990).

6. State of California, State Water Resources Control Board, "California Ocean Plan - Water Quality Control Plan, Ocean Waters of California" (Adopted and Effective March 22, 1990).

7. City of Santa Barbara, Request for Proposals for the Privatization of Alternative Water Supplies (Second Submittal), Part I - Required Information (June 1990).

8. Woodward-Clyde Consultants, "City of Santa Barbara-Emergency Water Supply-Ionics Desalination Project Initial Study (SB-106-90).

9. City of Santa Barbara, "A Report On The Water Emergency and the City of Santa Barbara Water Plan" (August 7, 1990).

10. City of Santa Barbara, "Long-Term Supply Alternative Analysis-Draft (November 27, 1990).

11. City of Santa Barbara, Alternative Water Supply Proposal Review Panel, "Selection of a Preferred Alternative Water supply Project" (August 3, 1990).

12. Sax, Irving N. and Ricard J. Lewis, Sr., <u>Dangerous Properties of Industrial Materials, Seventh Edition, Vol. 1,2, and 3 (1979).</u>

13. Clansky, Kenneth B., editor, <u>Suspect Chemicals Sourcebook, a Guide to Industrial Chemicals Covered Under Major Federal regulatory and Advisory Programs, Fifth Edition (1986).</u>

14. Weiss, G., editor, <u>Hazardous Chemicals Data Book</u>, Second Edition (1986).

15. Santa Barbara County, "Hazardous Waste Management Plan" (November 1988).

9-46

ATTACHMENT A

DR. JOHN I. BAUM, D.ENV
2107 MOUNTAIN AVE.
SANTA BARBARA, CA 93101

4 September 1990

Mr. Mitch H. Oshinsky
Principal Planner
City of Santa Barbara
630 Garden Street
Santa Barbara, CA 93102-1990

RE: Response to Notice of Preparation of an Environmental Impact Report for the Proposed Ionics Reverse Osmosis Desalination Project (SB-106-90).

Dear Mr. Oshinsky:

Thank you for the opportunity to provide comments for the City's Draft Environmental Impact Report (DEIR). Having reviewed the "City of Santa Barbara Emergency Water Supply Ionics Desalination Project Initial Study (SB-106-90)" prepared by Woodward-Clyde Consultants (August 24, 1990) and other supporting documents, including Ionics' "Second Submittal- Privatization of Alternative Water Supply" submitted to the City of Santa Barbara (July 23, 1990), I have come to the conclusion that there are several "significant environmental impacts" which the City should investigate prior to preparing the DEIR. The major environmental impacts are summarized in this cover letter. Further elaboration of the comments and recommendations are included in the attached report.

<u>Sea Water Intake</u> - The sea water intake system proposed by Ionics will severely limit the reliability of the overall desalination system. The intake system will significantly increase particulate and biological loading which will increase the requirements for hazardous solids and liquids removal.

<u>Solids Removal and Disposal</u> - The California Ocean Plan will require that the backwash from the multi-media filters will have to be clarified to remove solids before it can be discharged into the City's outfall. The liquid slurry removed will be considered a "hazardous waste" which must be hauled to a Class II or better landfill. Also, the used RO membranes will have to be disposed as a solid waste (classification unknown).

<u>Chemical Usage and Disposal</u> - In addition to the large quantity of process chemicals used by the proposed Ionics sea water reverse osmosis (SWRO) facility (i.e., 2.4 tons per day for a 5,000 acre-foot per year facility), an unspecified quantity and type of toxic chemicals will be required for membrane cleaning and long-term standby storage (known as "pickling"). These chemicals will have to meet stringent acute and chronic toxicity standards under the California Ocean Plan before being discharged into the marine environment.

<u>Sea Water Disinfection</u> - Ionics proposes using large quantities of chlorine to disinfect the sea water prior to the RO membrane filtration. Chlorine readily reacts with chlorides and bromides in the sea water to form carcinogenic trihalomethanes, which if formed before the dechlorination process would pass through the membranes with the potable water.

<u>Liquefaction</u> - Ionics has not provided any information on how foundations would be designed so that its structures would be able capable of withstanding the maximum probable earthquake.

<u>Water Quality</u> - The single stage SWRO system proposed by Ionics will have sodium, potassium and magnesium levels twice the City's existing average. These elevated mineral levels will impact heart and kidney patients on restricted diets.

<u>System Performance and Energy Use</u> - As the performance of the SWRO membranes deteriorate over time, additional energy will be required to maintain the required water recovery rates for meeting the contracted capacity of the facility.

Economic Considerations - Ionics has stipulated several qualifications and has omitted key components which will impact the actual cost of delivered water.

Alternatives - The City has stated that they will consider "reasonable" alternatives, this should include alternative technologies, principally low-temperature mechanical vapor compression (LT-MVC) distillation, and alternative sites capable of providing an alternative water supply to the City.

Short-Term vs Long-Term - The City should be considering an "emergency permanent" desalination facility which is capable of meeting the current drought requirement by early 1992, and reliably and cost-effectively meeting short falls between supplies and demands during future droughts consistent with the City's long-term goals.

Please do not hesitate to contact me if you need any clarification or further information.

Respectfully,

John Baum

Dr. John I. Baum, D.Env.

cc: Mayor and City Councilmembers
Environmental Review Committee

COMMENTS FOR DRAFT EIR OF THE IONICS' REVERSE OSMOSIS FACILITY FOR THE CITY OF SANTA BARBARA, CA

TECHNICAL CONSIDERATIONS

Sea Water Intake:

The sea water intake system proposed by Ionics will be an Achilles heel which will severely limit the overall availability of the desalination system. Also, the intake system will significantly increase the particulate and biological loading to the facility which will increase the requirements for solids removal and chemical usage.

Ionics' intake system consist of a 21 foot high, 12 foot diameter cylinder of fiberglass-reinforced plastic resin, located under the end of Stearn's Wharf. The bottom 6 feet of the structure will be screened (type not described) and would draw water from the ocean floor of the harbor. A submersible pump will pull water from the structure and transfer it through pipes which traverse the top of the Wharf.

The City's technical consultant, CH_2M Hill, has stated that "(r)evrse osmosis units require a relatively particulate-free feedwater (less than 0.3 NTU)." (NTU is a turbidity index). Consequently, CH_2M Hill recommended that the intake structure be located in approximately 50 feet of water [Ref. 1]. The City's environmental consultant, Woodward-Clyde, conducted a one day marine water quality investigation at the end of Stearn's Wharf. While Woodward-Clydes's report has never been released to the public, preliminary findings indicate that there is high turbidity and considerable biological organisms at the end of Stearn's Wharf [Ref. 2].

Sand transport in the Santa Barbara Channel is well known. Approximately 350,000 cubic yards of sand settle out in the Santa Barbara Harbor and has to be dredged out annually [Ref. 3]. The quantity of solids which pass by the Harbor without settling would be significantly greater.

Experience from Chevron's Gaviota ocean intake structure also indicates the magnitude of particulate loading off the Santa Barbara coast. Chevron's 10 foot diameter intake structure is in 30 feet of water. A one-foot wide screen is located 15 feet off the ocean floor. Water flows by gravity to an on-shore pump pit where a vertical turbine pumps the sea water to the desalination facility. The following results summarize the turbidity measurements on-site before the multi-media filter [Ref. 4]:

Nov-Mar (winter):	Normal (approx. 136 days) =	2-20 NTU
	Storms (approx. 15 days) =	20-80 NTU
Apr-Oct (summer):	Normal (approx. 171 days) =	1- 5 NTU
	Other (approx. 43 days) =	5-10 NTU

Note: These measurements do not include sand which settles out in the ocean intake structure and in the on-shore pump pit.

Sand loading at Chevron's on-shore pump pit has been so great that they have had to repair their vertical turbines seven times over the last 33 months, and this is with the facility operating at one-third capacity. Also, sand has to be removed from the intake structure after storms. Consequently, Chevron has expressed it wishes it had an intake structure in deeper water [Ref. 5]. The proposed location of the Ionics intake system will likely have significantly greater particulate loading then that experienced by Chevron.

The Ionics' sea water intake system which would draw water from the bottom of the ocean floor in shallow water of the Santa Barbara Harbor is inadequately designed for several reasons. First, the proposed intake system will draw in a considerable quantity of silt and sand from the actively dredged harbor. Also, the harbor is known to contain toxic metals, such as, copper and tributyl tin (TBT) which are biocides in boat paint, mercury and zinc [Ref. 6]. The quantity of solids and concentration of toxic metals will create a substantial solid waste disposal problem (refer to Solids Removal and Disposal). Second, the heavy loading of biological organisms from Santa Barbara's nutrient rich waters will require additional use of hazardous chemicals, that is chlorine for disinfection of the feedwater and sulfur dioxide for dechlorination. Also, toxic metals concentrated on the RO membranes will ultimately be removed during the cleaning process and have to be disposed as a hazardous waste (refer to Chemical Usage and Disposal).

Recommendation

The Draft Environmental Impact Report (DEIR) should investigate the quality of sea water during various oceanographic conditions (i.e., wave and wind conditions, algae blooms, etc.) at different water depths (i.e., 20 to 50 feet below MLW) to determine a reasonable location for the intake structure. The Applicant should specify what conditions would preclude operating the intake (e.g., NTU limitation) so that the overall availability of the desalination system can be accurately assessed. In general, based on "good engineering practice", the Applicant should consider locating the sea water intake in deeper, cleaner water and have a mechanism for silt and sand removal.

Solids Removal and Disposal:

Ionics indicated that backwash from the pre-treatment filters would be discharged with the brine reject out the City's sewer outfall. Not only is this a poor engineering design for protecting the City's gravity flow sewer outfall from capacity limiting siltation, but it would not be permitted under the California Ocean Plan.

The California Ocean Plan, which is the basis for establishing National Pollution Discharge Elimination System (NPDES) permit requirements, issued by the State's regional water quality control boards, states that [Ref. 7]:

1) Suspended solids can not exceed 60 mg/l on a 30 day average basis.

2) Settleable solids can not exceed 1 ml/l on a 30 day average basis, 1.5 ml/l on a 7 day average basis, or 3 ml/l maximum.

CH_2M Hill has already stated that "...the filter backwash solids stream will require a process for removing solids prior to disposal in the WWTP [waste water treatment plant] outfall." [Ref. 1].

A backwash clarifying tank would be required to remove the solids prior to being discharged to the City's outfall. The solids would be removed as a slurry and would considered either as a hazardous or "designated" hazardous waste. Under the California Hazardous Waste Control Regulations (California Administrative code Title 22, Article 11), the solid waste generator needs to have the waste stream analyzed for leachability using the "wet extraction test" (WET) method. If hazardous contaminants are present, such as metals or pesticides, the leachate must be bioassayed for toxicity. The State Department of Public Health Services, Toxic Substance Control Division would then make a determination of what category the solid waste would be classified as:

Class I - Hazardous Waste
Class II - Designated Hazardous Waste
Class III - Non-Hazardous Waste

Independent of the toxicity results, solid waste with greater than 50 percent water, such as the clarified backwash slurry, would have to be disposed in a Class II or I landfill. The nearest landfill which could accept the backwash slurry would be Bakersfield or West Covina. The Regional Water Quality Control Board would also make their own determination of where the solid waste can be disposed based on the potential impact to the ground water. For example, the RWCB would be concern about high chloride contents in the solid waste [Ref. 7]. Finally, each landfill would establish criteria on what materials they would accept.

Assuming only one-tenth of one percent of the total volume of feedwater is solids requiring removal; the quantity of solids from a 5,000 acre-foot per year facility requiring removal would be over 200,000 ft^3 per year. Based on this conservative assumption a semi-trailer of the solid waste slurry would have to be trucked from the site approximately every 9 days to a hazardous waste landfill at a cost well in excess of $1 million per year.

Also, Ionics did not indicate the quantity and waste classification of the used RO membranes and how the solid waste would be disposed. Since the non-biodegradable membranes will be clogged with various contaminants, they would need to be analyzed under Title 22 before being disposed.

Recommendation

Solid waste disposal is a "significant environmental impact" which requires further investigation. The DEIR should investigate the solids loading for the sea water intake structure selected. An ocean or near-shore clarifier should be considered to remove solids prior to being pumped to the desalination site. The expected quantity of solids which would be backwashed from the pre-treatment filters should be determined. At a minimum, the backwash should be clarified before being discharged into the City's sewer outfall and the solids slurry disposed as a hazardous waste. The Applicant should consider dewatering the solids removed. If the solid waste is not considered hazardous under Title 22 the dewatered waste may be disposed locally in a Class III landfill (i.e., Tajiguas) at considerable less expense. The space requirements for all the solids removal facilities (e.g., clarifier, dewatering press or sludge bed) should be identified. The DEIR should also identify the quantity and classification of the RO membrane solid waste. Finally, the availability of landfill space should be evaluated for all solid waste generated by the RO desalination facility.

<u>Chemical Usage and Disposal</u>:

Ionics has not provided any information on the type and quantity of chemicals used by the "Cleaning In Place" (CIP) system or "pickling" of the RO membranes during stand-by status.

Most RO companies claim that their surfactant cleaning agent is a biodegradable, non-toxic detergent, much like ordinary laundry detergents. Actually, the RO membrane cleaning solutions which usually contain a surfactant, metal chealating agent and acid are toxic. The toxicity of the spent cleaning solutions may also result from the built-up metals, pesticides or other toxins on the membranes which are removed during the cleaning process.

The California Ocean Plan stipulates an Acute Toxicity limit of 1.5 TUa for a 30 day average, 2.0 TUa for a 7 day average and 2.5 TUa maximum (Note: TUa = 100/96 hour Lethal Concentration-50 percent) using fish bioassays on the undiluted waste stream. These

tests generally take one week to perform. The new standards now require a Chronic Toxicity daily maximum of 1 TUc (Note: TUc = 100/No Observed Effect Level). The chronic toxicity test requires that there be "no observed effect" in the critical life stage of three aquatic species. Initially the species should include a fish, an invertebrate and an aquatic plant. The chronic toxicity test does allow consideration for the "initial dilution zone" from the outfall based on modelling plume dispersions.

Ionics' proposal provided no information on the type and quantity of cleaning chemicals. Ionics did indicate during their verbal presentation to the City's Review Panel (July 30, 1990) that they would be using the following membrane cleaning chemicals:

- caustic soda/EDTA (a metal chealating agent) at pH 12
- hydrochloric acid or citric acid at pH 2
- alkaline detergent or surfactural solution

Ionics' proposal only indicated that the spent cleaning solution would be adjusted for pH before being discharged into the City's sewer outfall. However, during their verbal presentation to the Review Panel Ionics indicated that if necessary they would dispose of the spent cleaning solution in a hazardous landfill. These vagaries dealing with a "significant environmental impact" require substantially more elaboration. One West Coast reverse osmosis facility using a cleaning formula similar to that proposed by Ionics has indicated that they have had considerable difficulty meeting their acute toxicity requirements, yet alone trying to meet the new more stringent chronic toxicity requirements [Ref. 9].

Ionics provided no information on type and quantity of chemicals which would be used to preserve the RO membranes when the units are on standby (known as "pickling"). There are a variety of "pickling" solutions which includes such toxic chemicals as formaldehyde. Any pickling chemical would require toxicity tests before being discharged.

Recommendation

The DEIR should clearly state all chemical usage including, but not limited to, RO membrane cleaning and "pickling". Material Safety Data Sheets (MSDS) should be provided for each chemical along with the quantity of usage. Since the discharge of toxic chemicals could have a "significant environmental impact", the DEIR should demonstrate that all ocean discharges will be able to comply with the California Ocean Plan. The DEIR, therefore, should report the results of acute and chronic toxicity bioassays on representative chemical discharges using standard methodologies established by the California State Water Quality Control Board.

<u>Sea Water Disinfection</u>:

Ionics proposes to disinfect the sea water prior to two stage filtration process with chlorine gas to eliminate biofouling of the

membranes. Since the membranes are sensitive to oxidation by chlorine, the sea water must be dechlorinated prior to the RO process. Ionics proposes using sulfur dioxide gas for dechlorination.

It is well known that chlorine will readily react with chlorides and bromides in sea water to form a variety of carcinogenic compounds known as trihalomethanes (THMs), These include: trichloro-methane (chloroform), bromo-dichloro-methane, dibromo-chloro-methane, and trichloro-methane (bromoform). Once the THMs are formed they are capable of passing through the RO membranes and entering the product drinking water.

CH_2M Hill's evaluation expressed concern that Ionics' chlorination of sea water "...could result in the formation of trihalomethanes (THMs)" [Ref. 10]. While Ionics indicated during their Review Panel interview (July 30, 1990) that they believe there would be insufficient contact time to form THMs prior to the addition of sulfur dioxide, they did not provide any evidence to support their assertion. CH_2M Hill's evaluation then questioned if the chlorine contact time would be sufficient to provide disinfection [Ref. 10].

Recommendation

The formation of a carcinogenic substance in the public drinking water supply is a potentially "significant health impact". The DEIR, therefore, should provide documentation on the actual chlorine contact time prior to sulfur dioxide dechlorination and evidence that the contact time is below the reaction rates of THMs. Also, what safeguards will be provided in case, for any reason, there is insufficient dechlorination? And how will the product water be monitored for the presence of THMs.

Perhaps the Applicant would want to consider the disinfection method successfully used by Chevron's Gaviota facility, that is, ultraviolet light. Using ultraviolet light would eliminate the use of hazardous chlorine and sulfur dioxide gas and the potential formation of THMs.

<u>Liquefaction</u>:

The proposed site is on artificial fill which is subject to liquefaction. Ionics has not indicated what their equipment loads will be and what type of foundation will be used.

Recommendation

The DEIR should state the type of equipment and building loads and the supporting foundation capable of withstanding a maximum probable earthquake.

Water Quality:

While the Total Dissolved Solids of Ionics' reported water quality is less than the City's average potable water supply the sodium, potassium, magnesium and chlorides are significantly greater.

Parameter (ppm)	Ionics	City of S.B.*	Difference
TDS	445	700/656 (689)	65 %
Sodium	153	55/ 59 (56)	273 %
Potassium	6	3/2.3 (2.8)	212 %
Magnesium	27	50/44 (49)	180 %
Chlorides	220	30/117 (52)	425 %

* Note: Average surface water/average groundwater [Ref. 11] (Total city average is based on 75% SW and 25% GW).

Higher sodium levels increase blood pressure and thereby increase the risk of heart disease and strokes. Higher potassium and magnesium adversely effects individuals that have poor kidney function. In general, anyone on a restricted sodium, potassium or magnesium diet would be impacted by the increases in the water supplied by the proposed sea water reverse osmosis facility. The higher chloride levels in the potable water would increase the potential formation of THMs when post-treated with chlorine.

Recommendation

The DEIR should conduct a health risk analysis to determine the impact of higher sodium, potassium and magnesium levels in the drinking water. The Applicant may also want to consider adding a second stage to the RO system to improve water quality (Note: the Marin Municipal Water District is iniating a two-stage RO system pilot plant to determine water quality levels before building a 5,000 acre-foot per year desalination plant.)

System Performance and Energy Use

The RO membranes have a finite lifetime. Depending on the quality of the pre-treatment and cleaning of the membranes, they may or may not last the normal three year guarantee period. Even under the best pre-treatment and cleaning conditions the membranes will lose efficiency over time. According to CH_2M Hill "RO systems' membranes also compact over time, which decreases their production efficency by as much as 25 percent in 3 to 5 years" [Ref. 13]. Also, when the membranes are "pickled" for standby, the membrane efficiency decreases, even without use. With a decrease in membrane efficiency the recovery ratio declines, which results in a lower percent of product water. In order to compensate for the loss in membrane efficiency, the pressure in the RO pumps needs to be increased, which will require additional energy and will result in a shorter life to the high pressure pumps.

Recommendation

The DEIR should provide expected degradation curves for the RO membranes during normal operation and during standby. The DEIR should also state the additional energy required to meet its design recovery rates as membrane efficiency decreases.

ECONOMIC CONSIDERATIONS

Ionics has stipulated several qualifications and has omitted key components which will impact the actual cost of their water.

Recommendation

The Applicant should clarify the following costs:

1) Cost to locate the sea water in deeper, cleaner water.

2) Cost, if required, to modify Stearn's Wharf to accommodate running the sea water intake pipeline under the Wharf.

3) Cost to include liability and business interruption insurance to cover damages to Stearn's Wharf due to Ionics sea water intake system.

4) Cost to include a solid waste removal system to the pre-treatment filter backwash and the solid/hazardous waste disposal cost.

5) Additional power requirements to compensate for loss of membrane performance.

6) Evidence that Southern California Edison will sign an I-3A interruptible contract even though actual power delivery will be about one year after the contract signing deadline. (Note: I-3A contract must be signed before December 31, 1990 and is only effective until December 31, 1992. The normal 10 minute interruptible rate is I-6A, which is 10 percent greater than I-3A).

7) Total cost to handle interconnection of all water production capacities into the City's distribution system.

8) Cost of providing sulfur dioxide gas (or dechlorination substitute) (Note: The El Estero WWTP does not have any surplus sulfur dioxide gas available [Ref. 12].)

9) Confirmation that cost of funds (debt and equity) will not exceed 9 percent.

ALTERNATIVES

Alternative Technologies:

Low temperature-mechanical vapor compression (LT-MVC) distillation desalination should be considered the best "reasonable" alternative to the proposed SWRO process. Virtually all desalination experts agree that LT-MVC is a comparable technology to SWRO. This includes studies by the, CH_2M Hill [Ref. 13], Bechtel Group Inc. [Ref. 14] and the Energy and Environmental Research Corporation [Ref. 15]. There are several significant differences between the Ionics SWRO and the LT-MVC distillation desalination processes. A summary of some of the key environmental differences is provided in Table 1.

Recommendation

The DEIR should fully evaluate the LT-MVC distillation desalination technology as a viable alternative emergency water supply to the proposed SWRO process on an across the board comparison. Unless the water supply alternative can supply water by early 1992 it should not be considered an "emergency" water supply alternative. Projects such as the State Water Project or raising Bradbury Dam at Lake Cachuma, which will take 5 to 10 years to implement, should not be considered as viable alternative emergency water supplies.

Alternative Sites:

Sites other than the proposed location adjacent to the El Estero WWTP should be evaluated.

Recommendation

A suggested list of "reasonable" viable alternative sites include:

Location	Owner
Adjacent to the S.B. Airport	City of Santa Barbara
More Mesa natural gas complex	Southern California Gas Co.
Adjacent to the Goleta Water Dist.	Southern California Gas Co.
UCSB campus	Univ. of Calif. Regents
Adjacent to Ellwood power plant	Southern California Edison

Short-Term vs Long-Term:

The City's Environmental Review Committe requires a mandatory finding of the question; "Does the project have the potential to achieve short-term, to the disadvantage of long-term goals?" The City's short-term goal is to have a source of emergency water available by early 1992 when Lake Cachuma, the City's primary water supply source, would be dry if the current drought continues. The long-term goal of the City is to provide a "permanent desalination project" which will meet short falls between supplies and demands during future droughts [Ref. 16]. The City contends that the "emergency" desalination facility currently being proposed is different than the "permanent" desalination facility required to meet the City's long-term goals. While the "emergency" desalination facility will be fully amortized over 5 years, the City has an option to extend the service contract indefinitely or purchase the facility for a nominal cost and operate the facility themselves. It therefore seems extremely probable that in fact the proposed desalination project will be the City's "permanent" desalination facility. It would be prudent, therefore, to consider the proposed desalination facility as an "emergency permanent" project which needs to consider both the short-term and long-term goals of the community.

SWRO is a maintenance intensive process requiring extensive pre-treatment and constant replacement of critical parts (i.e., membranes and high pressure pumps). Typically, reverse osmosis is used to desalinate brackish or reclaimed waters. As a relatively new technology with limited operating experience SWRO is not a cost-effective, reliable long-term desalination process.

Recommendation

Distillation, which is used by almost 95 percent of the world to desalinate sea water, is widely recognized as the most reliable long-term desalination process. LT-MVC distillation units, which are factory assembled, can be quickly and easily set-up in the field. LT-MVC which is primarily designed for desalinating sea water is proven to reliably operate for over 30 years. The process is tolerant to feedwater quality, therefore there are no critical pre-treatment requirements. The LT-MVC facility can be easily turned on or off as needed. The system is well suited to long-term standby, if necessary. The process units simply needs to be flushed with fresh water and dried-in this state the units can be maintained indefinitely, yet capable of being turned on in one day without any loss in the system efficiency.

LT-MVC therefore should be considered as the "emergency permanent" desalination process which is capable of best meeting the City's short-term and long-term goals.

Table 1

ENVIRONEMTAL COMPARISON OF SEA WATER REVERSE OSMOSIS WITH LOW-TEMPERATURE MECHANICAL VAPOR COMPRESSION DISTILLATION

	SWRO	LT-MVC
Feedwater Standards	intolerant	tolerant
• solids	<0.0004 in.	<0.25 in.
• bio-organisms	none	N/A
• oxidants (eg. Cl)	none	N/A
• oil & grease	none	N/A
• iron (as ferrous)	<0.05 ppm	N/A
• pH	acidic	normal
Chemical Usage (tons/year) 5,000 acre-ft/yr facility	substantial	minimal
• sea water pre-treat.		
- chlorine (gas)	80	0
- ferric chloride	159	0
- antiscalent	15	56
- sulfur dioxide (gas)	80	0
- carbon dioxide (gas)	302	0
• product water treatment		
- caustic soda	183	0
- sodium carbonate	0	20
- zinc ortho-phosphate	35	0
- chlorine	13	13
• process cleaning	toxic chemicals	non-toxic
- RO membrane sltn.	(not provided)	N/A
- sulfamic acid	0	5.6
• long-term standby	toxic chemicals	no chemicals
- RO "pickling"	(not provided)	N/A
- MVC system	N/A	0
Water Quality (ppm)	marginal	excellent
• TDS	445	50
• sodium	153	15
• potassium	6	0.6
• magnesium	6	1.8
• chloride	220	28
Potential Carcinogens	yes	no
Noise (dBa at 5 ft.)	90-100	70-80
Process Energy (kWh/1,000 gal)	20 (w/energy recovery)	30

REFERENCES

1 CH_2M Hill, "Desalination Feasibility Study - Summary Report", prepared for the City of Santa Barbara Public Works Department and the Goleta Water District (March 1990).

2 Robert Ray, Senior Project Scientist, Woodward-Clyde Consultants. Personal communication to the Public Hearing fo the City of Santa Barbara's Alternative Water Supply Review Panel" (July 27, 1990).

3 Nobel Consultants, "Comprehensive Sand Management Plan - Main Report", prepared for the Beach Erosion Authority for Control Operations and Nourishment (July 14, 1989).

4 Bob Burleson, Senior Engineer, Chevron U.S.A. Inc., Gaviota Oil and Gas Plant. Memorandum to Ambient Technologies (August 13, 1990).

5 Dave Lease, Chemical Technologist, Chevron U.S.A. Inc., Gaviota Oil and Gas Plant. Personal communication to the City of Santa Barbara Environmental Review Committee during a public tour of the Gaviota desalination facility (August 23, 1990).

6 Tom Kukol, Special Studies, Central Coast Regional Water Quality Control Board. Personnal communication (September 4, 1990).

7 State of California, State Water Resources Control Board, "California Ocean Plan - Water Quality Control Plan, Ocean Waters of California" (Adopted and Effective March 22, 1990).

8 Bill Meece, Permit Engineer, Central Coast Regional Wataer Quality Control Board. Personnal communicaation (September 4, 1990).

9 Confidential. Due to the senesitive nature of dealing with the disposal of toxic chemicals, the supervisor of the reverse osmosis facility asked not to be identified.

10 CH_2M Hill, "City of Santa Barbara Emergency Water Supply Project - Preliminary Summary Report, Overview of Second Proposal Submittal Evaluations" (August 6, 1990).

11 City of Santa Barbara, "Annual Water Quality Report - 1989" (March 19, 1990).

12 Steve Strausburg, Treatment Plant Supervisor, El Estero WWTP. Personal communication (August 28, 1990).

13 CH_2M Hill "Technical Memorandum 2, Initial Development and Screening of Project Alternaatives" prepared for the University of California at Santa Barbara (June 1990).

14 Bechtel Group Inc. "Desalination Technology Report on the State of the Art" prepared for the Metropolitan Water District of Southern California.

15 Energy and Environmental Research Corporation "A Study of Supplemental Water Supply Options for the University of California at Santa Barbara (May 1988).

16 City of Santa Barbara, "A Report On The Water Emergency and the City of Santa Barbara Water Plan" (August 7, 1990).

9-47

ATTACHMENT B

August 5, 1990

ambient technologies, inc.

Mayor and Councilmembers
City of Santa Barbara
735 Anacapa Street
Santa Barbara, CA 93102

Dear Mayor and Councilmembers:

Ambient Technologies, Inc. (ATI) would like to acknowledge the diligent efforts of the Alternative Water Supply Proposal Review Panel, and their consultants, in preparing the comprehensive report to the Mayor and Councilmembers, dated August 3, 1990. We appreciated the openness with which the Review Panel conducted its evaluation. While understandable, unfortunately there was no opportunity (other than the interview) for us to comment during the public meetings which formulated the Review Panel's conclusions and recommendations. We would like, therefore, to take this time to formally respond to portions of the Review Panel's report.

While it may appear that we are being critical of the reverse osmosis (RO) process, we feel it is vitally important to point out the major differences between the two desalination technologies so that the City can make a truly informed decision. Throughout the world RO is predominantly used with brackish or naturally filtered sea wells. In the few areas where RO uses direct sea water, the quality of the water is better than Santa Barbara's sea water, which is organically rich and full of silt and sand. On the other hand, ATI's Mechanical Vapor Compression (MVC) is specifically designed to operate on direct sea water intake.

Despite the greater initial capital cost to install ATI's MVC distillation facility and sea water intake system, the overall system, which is designed to reliably operate for a least 30 years, will provide the least expensive unit cost of water to the City over the long-term. ATI has more experience in building and operating desalination systems then any other respondent and will be backed by direct corporate guarantees of a billion dollar a year government corporation. ATI's overall desalination system is environmentally benign and capable of reliably providing a high quality product water for the lifetime of the facility. Also, the MVC units are very flexible in providing any desired capacity and if not needed they can easily be maintained on standby.

For these reasons, ATI sincerely hopes you will consider selecting us as your partner in providing a facility which will meet the near-term and long-term water needs of the community.

Respectfully,

Dan Mishkal
President

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2999 Northeast 191st Street
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AMBIENT TECHNOLOGIES, INC.
COMMENTS TO
REVIEW PANELS REPORT
(Dated August 3, 1990)

PROJECT DESCRIPTION

The City's Request for Proposal (RFP) did not specify a preferred sea water intake system. The staff, however, released a draft drawing indicating that their initial concept was a pipeline off of Stearn`s Wharf with a pump house on the wharf. It was also known that there is an abandoned 42 inch sewer outfall which might be useable; however, the feasibility of using the abandoned sewer outfall was not known at the time the proposal was due, so ATI chose to work with the staffs' preliminary concept of using Stearn's Wharf.

ATI retained a world renowned engineering firm knowledgeable in the design, construction and operation of sea water intake systems in the Santa Barbara area. The sea water intake system which was designed is based on the UCSB system, which has been in successful operation for 15 years. The intake system proposed by ATI will successfully provide feedwater with minimal silt and sand on a continuous basis commensurate with the 30 year life of the Mechanical Vapor Compression (MVC) distillation system. While our intake system is based on "good engineering practice" the staff report alleged that it would be more difficult to permit and consequently gave ATI lower Environmental and Permitting ratings.

Unlike the RO process, the distillation process proposed by ATI is not sensitive to the quality of the feedwater. If asked by the City, ATI would modify the intake system to meet the City's request. ATI, however, strongly believes that it would not be prudent to take sea water from the surf zone, such as proposed by the two RO respondents. The intertidal waters off of Santa Barbara are very rich in biofouling organisms and are laden with a substantial quantity of silt and sand (Note: studies indicate approximately 350,000 tons per year of silt and sand pass by the Santa Barbara Harbor). Minimizing silt and sand was considered critical, since the City's sewer outfall was being used for brine (and in the case of RO, backwash) disposal.

ATI believes that there is still considerable merit to using the abandoned sewer outfall as a sea water intake system. We felt, however, that it was premature to quote a bid to the City on a system which had not been thoroughly investigated. While we had concerns regarding a possible conflict of interest with the City using Oceaneering to conduct the investigation of the abandoned sewer at the same time Oceaneering was being retained by Aqua Design, we did not object because we felt that all proposers would be provided the results of Oceaneering's investigation. It appears some what curious that the information of their study was never

released prior to the final submittal, yet Aqua Design had the "foresight" to base their submittal on the abandoned sewer outfall, which gave them a significant cost advantage.

Since the sea water intake system ultimately deemed appropriate by the City can be used by any of the desalination respondents, the City's selection process should not be based on the cost or permitablity of any of the sea water intake systems proposed.

OVERALL SYSTEM DESIGN

Reliability: Unlike the RO respondents, ATI's proposed sea water intake system, which is located beyond the surf zone and which includes a clarifier, would not be susceptible to storms (or algae blooms). The intake system is specifically designed to reliably operate on a continuous basis for at least 30 years.

Flexibility: As indicated in our project schedule, all design work will be done during the same period as the permitting. Consequently, ATI fully intends to design the overall desalination system to address the concerns that may rise from the environmental and permitting process. Since design work was not included in our Permitting Allowance, any additional design work required to comply with or facilitate the environmental and permitting process, will be at ATI's expense and not subject to extra compensation by the City.

COST

The City's RFP included an option to extend the Service Agreement beyond the initial five year term without allowing any capital cost to be amortized beyond the initial term. This structure prevented ATI from including a residual value, which would have lowered our annual capital costs. Since ATI's facility would be capable of operating for at least another 25 years after the initial contract term, the facility would have considerable residual value. It was on this basis that ATI indicated no decommissioning cost, since the salvage value would exceed the cost of removing the equipment.

In order to properly evaluate the alternative water supply options the City should perform a "lifecycle cost" analysis, which evaluates the Net Present Value (NPV) of the project alternatives based on the useful life of the projects. Since ATI's MVC distillation process is capable of operating twice as long as the RO facilities it would be the lowest cost water supply alternative. This method of analysis is the conventual means of evaluating public works projects of this magnitude. A base case analysis of a 30 year NPV, which does not factor in the additional cost to overhaul or replace the RO facilities to enable them to last 30 years, is provided in Table 1. ATI's MVC system is also less expensive to maintain on standby if the City does not need desalinated water during wet years (refer to Table 2).

Table 1

5,000 AFY LIFECYCLE COST ANALYSIS

(1991 $/AF)

Project Duration	Ionics	Aqua Design	Ambient
5 years	1,710	1,633	1,998
10 years	1,299	1,329	1,410
15 years	[1,161]	[1,228]	1,214
20 years	[1,093]	[1,177]	1,116
25 years	[1,052]	[1,147]	1,057
30 years	[1,024]	[1,127]	1,018

Assumptions:

- All capital costs are based on the overall system design presented to the City (Note: Ionics and Ambient Technologies indicated that their amortized capital costs would be between $70-50/AF and $150-100/AF less, respectfully, if they used the abandoned sewer outfall like Agua Design).
- Ambient Technologies electric rates have been adjusted to be the same SCE interruptible rate used by Ionics (i.e., I-3A, 16 kV) (Note: the initial difference is $77/AF).
- The entire portion of each desalination respondent's Water Delivery cost is escalated at 7 percent/year.
- The Net Present Value Discount Rate is 7 percent/year.
- The RO systems proposed by Ionics and Aqua Design have a useful life of 10-15 years. The NPVs have not been adjusted to reflect the actual cost of operating the RO systems beyond 10-15 years. The NPVs used for the RO proposals beyond 10 years are therefore not valid.

Table 2

5,000 AFY STANDBY RATES

(1991 $/AF)

	Ionics	Aqua Design	Ambient
First 5 Years			
Short-Term	1,250	1,114	1,720
Long-Term	1,175	1,114	1,632*
Second 5 Years			
Short-Term	422	473	287
Long-Term	347	473	199*

*Note: Corrected contractual rates (refer to letter to Mr. Mark Paul dated August 1, 1990)

Short-term standby is less than six months.

Long-term standy is greater than six months.

RELIABILITY OF FIRM

Financial Strength: ATI is more than a subsidiary of Israel Desalination Engineering, Ltd. (IDE) whose sales last year were over $60 million. They are a wholly-owned subsidiary of the government owned Israel Chemicals, Ltd. (ICL) that has annual sales of over $1 billion. With financial guarantees backed by ICL, ATI has the significantly greater financial strength of any respondent to the City.

Project Team: ATI/IDE has more experience in designing, constructing and operating desalination facilities than any other respondent. ATI/IDE has built and operated over 200 distillation facilities (all direct sea water intake) over the past 25 years. Of equal importance is the project team which will be responsible for off- and on-shore engineering, construction and permitting. ATI is using the leading sea water intake engineering firm on the West Coast. Some of the sea water intake systems designed and installed by D.W.Thomson include UCSB's Marine Laboratory, Sea World, and the Monterey Aquarium. All other engineering and construction work will be done by highly qualified local firms. Environmental permitting will be performed by the Santa Barbara office of the nationally recognized environmental consulting firm of ERC Environmental and Energy Services Co. ATI was the only respondent to identify the entire project team from design, engineering, construction and operation.

FLEXIBILITY

Variable Water Production: Each MVC unit is capable of operating at between 40 and 110 percent of its rated capacity. Based on having multiple units, the four capacity options of the City could be operated at capacities as low as 10 to 2.5 percent. The MVC units are also much more suitable for operating on standby. The units simply need to be flushed with fresh water and dried. The units can be maintained on standby indefinitely and then restarted with one day's notice.

Temporary: Although ATI's proposed facility is designed for a 30 year useful life, it is also capable of being easily decommissioned if necessary. The MVC units are packaged in two basic units which can be easily disassembled and removed. Even the offshore caisson can be refloated and removed. The double wall surrounding the distillation plant could be removed if necessary, but it may be more desirable to use it, as well as the concrete foundation, for an unspecified purpose in the future.

ENVIRONMENTAL

Chemical Use: There are major differences in chemical usage between RO and ATI's distillation process. RO is heavily dependent on pretreatment of the feedwater in order to protect the membranes

from mechanical plugging, organic and inorganic fouling and bacteria proliferation. Consequently, the RO systems must use pretreatment chemicals for disinfection, coagulation, flocculation, de-chlorination, pH reduction and anti-scaling. Neither RO respondent presented a complete description of their chemical usage or submitted Material Safety Data Sheets, which would indicate the hazards of the chemicals. Since ATI is using distillation, the process is not sensitive to the quality of the pre-treatment; therefore, ATI will only need to use a small quantity of one pre-treatment chemical, an anti-scalent at 4 ppm. ATI's anti-scalent is EPA approved and meets U.S. Food and Drug Administration standards.

Product Water Quality: The Review Panel considered any water which is better than the City's substandard water (i.e., approximately 700 ppm Total Dissolved Solids) to be "good". However, there is a significant distinction between RO and distillation (and Canadian imported) water. Even after the product water is buffered to be made compatible with the City's distribution system, RO product water will be about 450 ppm TDS, while ATI's distilled water, which is virtually equivalent to natural rain water, would be about 50 ppm TDS. The RO water which will have a high chloride content (almost 250 mg/l) and hardness, has significantly poorer quality than distillation (or Canadian imported) product water. We suggest that the City Mayor and Councilmembers actually taste the product waters from the respondents' similar facilities to recognize the significant difference.

Marine Life and Aquatic Biology: The Review Panel apparently overlooked the merits of ATI's biofouling control system which is environmentally benign to the marine environment. It is well known that sea water intake systems are plagued with biofouling problems. Historically, large quantities of chlorine are used to kill the organisms. This method of "shock chlorination" has been severely criticized by environmental agencies as having a significant environmental impact on the marine environment. ATI has mitigated this problem by using a technique which is not dependent on chemical disinfection. ATI is proposing an environmentally benign technique which back flushes the sea water intake system with potable water and a mechanical cleaning device (known as "pigging"). The fresh water, which contains a minute amount of residual chlorine, is sufficient to discourage marine organisms from taking residence in the sea water intake. This non-chemical biofouling control technique has been successfully used in numerous sea water supply systems, including UCSB.

While the exact impact of ATI's sea water intake system on the marine environment was considered unknown by the Review Panel, several facts are known. First, the actual area needed for the sea water intake system is minimal and there is a high degree of flexibility regarding its actual location. Also, it is known that most of the ocean floor where the intake system will be located consists of shifting sand and is sparsely habitated.

The long-term health effects of discharging the large quantity of RO pre-treatment chemicals are not known.

Aesthetics: During the public meetings the Review Panel indicated that the architectural screen around ATI's facility was suitable for the area which is zoned Ocean Oriented Manufacturing. It was pointed out that a primary consideration of the City's Architectural Board of Review is that "design should follow function". This design concept was incorporated into ATI's distinctive Spanish screen wall which substantially masks the appearance of the facility, but still allows one to acknowledge the intended purpose of the facility. The Review Panel was more critical of the ocean clarifier/pump house located off the end of Stearns Wharf. While due to time limitations no artist rendering was provided for the clarifier/pumphouse, ATI indicated that it would be made architecturally compatible with the wharf. Again, ATI is not limited to the sea water intake system submitted in our proposal, and is fully prepared and capable to accommodate the City in using any intake system it prefers.

Short-term construction impacts: ATI deliberatly designed a sea water intake system which would minimize construction impacts. The ocean clarifier would be constructed on-shore and floated into place. While there would be a minimal amount of dredging required for the caisson it would be insignificant in comparison to the massive quantity of silt and sand which is continuously dredged from the Santa Barbara Harbor. The sea water polyethylene intake pipeline would be fusion welded and have concrete anchors installed on-shore. The pipeline and anchors would be floated out into position and then allowed to sink into place once filled with water. In order to minimize any trenching on the beach, ATI proposed laying the sea water intake system during the winter when the beach is naturally "scoured".

Risk of Upset: There is a significant risk of upset associated with RO which the Review Panel did not indicate. The RO membranes are extremely sensitive to feedwater quality. A variety of constituent, such as organic or inorganic particulate matter, chlorine, or oil and grease, can easily destroy the RO membranes requiring that the system be shut down and the membranes be replaced. The events which would subject the RO system to catastrophic failure can not only result from Acts of God, such as an oil spill in the harbor, but from human failure and general mechanical failure of RO's delicate pre-treatment system.

The sea water intake systems proposed by the RO respondents also are subject to disruptive upset. Since both RO respondents have their intake structures in the intertidal zone they are extremely susceptible to heavy silt and sand loading during active ocean conditions and algae blooms. These conditions would require that the systems be shut down for an indeterminent period of time. ATI's sea water intake system was specifically designed to avoid these known upset conditions.

Recreation: As previously stated ATI's, ocean caisson is not required if its potential aesthetic or recreational impacts override good engineering design.

PERMITTING AND LICENSING

The Review Panel's only permitting and licensing concern of ATI's entire facility was the sea water intake system. ATI's intake system was designed based on "good engineering practice" to provide the City with a reliable supply of feedwater to assure that a desalination system could provide both short-term and long-term water supply needs. However, as previously stated, ATI's can easily accommodate any sea water intake system the City prefers. Since all the desalination facilities would require essentially the same sea water intake system deemed acceptable to the City, it would be inappropriate to discount any respondent's permitability on the basis of their recommended sea water intake system.

9-48

ATTACHMENT C

JOHN I. BAUM, D.ENV.
2107 MOUNTAIN AVE.
SANTA BARBARA, CA 93101

14 August 1990

Mayor Lodge and Councilmembers
City of Santa Barbara
735 Anacapa Street
Santa Barbara, CA 93102

Dear Mayor and Councilmembers:

There has been a tremendous amount of information presented by all the proponents. Several consultants presented additional information. The Review Panel has performed a Herculean task to synthesize all this information and has made a recommendation. Now the Council must decipher all the inputs and make a decision which will best meet our community's critical water shortage.

In order to meet the Council's tight schedule, the review Panel had to evaluate all the proposals as they were submitted, unfortunately with some critical facts missing. The most notable issue involves the sea water intake. Each desalination proposal recommended a completely different intake system, with different technical, environmental and economic implications. No one really knows at this time which one is best for the City.

There has not been a detailed examination of the quality of the sea water. Woodward-Clyde conducted a one day investigation, but their final findings were not available at the time of the Panel's decision. In fact, their report still has not been finalized. However, preliminary findings indicated that the turbidity and organic loading was significant at the end of Steam's Wharf.

Each proponent submitted their best design concept. Aqua Design opted for the lowest cost system, but without knowing if the abandoned sewer outfall was feasible. Ionics opted for using Steam's Wharf, but still does not know the extent of additional costs which may be required with that option. Also, neither addressed the critical issue of how silt and sand would be kept out of the City's existing sewer outfall. Ambient took the most conservative approach and designed a system which is similar to the intakes used by Chevron's Gaviota desalination plant and UCSB's Marine Lab. While more elaborate and expensive, it was designed for continuous reliable operation and ensures that silt and sand will not be discharged into the City's sewer outfall.

While Woodward-Clyde's marine study will be useful, more information will be required to determine water quality conditions during different oceanographic conditions before determining the preferred location of a sea water intake. While the abandoned sewer outfall is still the preferred choice, its condition still needs to be further investigated. Also, the mechanism for preventing silt and sand from entering the sewer outfall also needs to be established before finalizing the sea water intake.

Ultimately, the City will have to decide which intake system best meets its needs and, whatever system is selected, it will be the same one used by all three desalination proponents. The Council's decision, therefore, should not be based on the intake structure. Attached is the is the Panel's Evaluation of Issues. The circled issues were largely based on the intake structures. As you can see, half of the major evaluation criteria were effected, namely overall system design, cost, environmental and permitting. Adjusting the comparison to exclude the intake system would have a significant impact on the overall evaluation.

Other adjustments also need to be made before making an economic comparison; for example, electric rates. Ionics took an aggressive position that Southern Califorinia Edison would extend its temporary I-3A rate to a new customer who would not come on line until over a year after the contract signing deadline. SCE has never formally ruled it would accept that position. If the rate were acceptable, it would also be available to Ambient, with a net water production cost of $77/AF less then proposed (5,000 AFY option).

I would like the Council to consider that while you are making a decision for an emergency water supply project, the facility will undoubtably be with us for the long-term. The Review Panel has acknowledged that Ambient has the best long-term potential. While others may say they will be suitable for the long-term, neither RO proponent has operated a direct sea water facility for over 5 years. All of Ambients 200 direct sea water intake distillation facilities which have been installed over the past 25 years are still operational. No one in the industry can match that proven track record. Distillation is widely known to provide the most reliable and lowest cost desalination of sea water. It is no coincidence that almost 95% of all direct sea water desalination in the world is by distillation.

Finally, whether this facility is called a temporary or long-term desalination project, the permitting process will be the same and therefore the implementation timeframe will also be the same. Knowing that the selected facility is capable of long term operation will encourage other water districts to participate with the City, which will reduce the unit cost of water to the City's ratepayers.

Therefore, I urge the City to consider Ambient's proven success and get the dual advantage of having an emergency water supply alternative which will also be capable of meeting our community's long-term needs.

Thank you for your consideration.

Sincerely,

John Baum

John Baum

G - Good
S - Satisfactory
P - Poor
U - Unknown
NR - Non Responsive

ATTACHMENT B

*Note: AFFECTED BY PROPOSED SEA WATER INTAKE SYSTEMS

DESALINATION

EVALUATION OF ISSUES

		IONICS	AQUA DESIGN	AMB. TECH
1.	Overall System Design			
	Completeness	G	S	G
	*Reliability	S	S	S
	Flexibility	G	S	S
	Feasibility	G	G	G
2.	Facility Construction/Equipment Acquisition			
	Local: Schedule & Existing/New	S	S	S
	Long Lead Time	G	G	S
3.	Cost (5,000 AF per year, current dollars)			
	*5-Year Option (cost per AF)	$1953	$1838	$2390
	2nd 5-Year Period (cost per AF)	$ 949	$1097	$ 957
	Initial Long-Term Standby Costs (cost per AF)	$1175	$1114	$1720
4.	Reliability of Firm			
	Financial Strength	G	P	S
	Bonding Capability	S	NR	S
	Experience with Proposed System	G	G	G
	Project Team	G	S	S
5.	Flexibility			
	Variable Water Production	G	S	G
	Cost of Change	S	S	S
	Regional Application	S	P	S
	Temporary	G	G	S
	$\boxed{\text{Long Term Potential}}$	S	S	$\boxed{\text{G}}$
6.	Environmental			
	Chemical Use and Storage	S	S	S
	Product Water Quality	G	G	G
	Air Quality	S	S	S
	*Marine Life and Aquatic Biology	S	S	U
	*Sensitive Habitat Onshore	U	G	G
	Noise	S	S	S
	*Aesthetics	S	S	P
	*Archaeology	U	S	U
	Energy Consumption	S	S	P
	*Construction Impacts (short-term)	P	S	P
	Risk of Upset	S	S	S
	*Recreation	S	S	P
7.	Third Party Agreements	G	G	G
8.	Permitting and Licensing			
	Local	G	G	G
	*State	S	G	P
	*Federal	G	G	S

Response 9-1: The comments presented in this letter as well as the previous letter come from a representative of an unsuccessful bidder on the City's temporary emergency water supply project whose proposal was based on low temperature - mechanical vapor compression (LT-MVC) distillation technology rather than reverse osmosis. The reverse osmosis desalination proposal submitted by Ionics was selected by the City as the preferred alternative after detailed review. The commentor's substantive points have been considered in the EIR and responded to herein, in accordance with the requirements of CEQA.

Response 9-2: Refer to Response 8-1. The City of Santa Barbara has spent many hours thoroughly evaluating distillation desalination as an alternative temporary emergency water supply. The details of that analysis are contained within Appendix D of this environmental impact report. The conclusion of the alternative analysis is that distillation was ranked second among the desalination proposals. Distillation was found not to be an environmentally preferable alternative due to it being up to 50 percent more energy intensive than reverse osmosis, and its 33 foot high tank units would be significantly taller and more visible than the 14 foot high trailers and one 20 foot tall tank of the proposed reverse osmosis plant.

The analysis of the distillation proposal also identified disadvantages associated with the proposed massive intake/clarifier structure off of Stearns Wharf. This structure would have potentially adverse impacts related to visual resources, public safety related to storm damage to Stearns Wharf should the structure break loose, and noise. In addition, potentially negative impacts on fishing/recreation and marine life and aquatic biology were identified for the proposed clarifier and subsea pipeline. Although the proponent has subsequently informed the City that the Stearns Wharf structure could be eliminated, the proponent did not provide information on how the seawater would be clarified and how the clarifier sludge would be disposed of. This change to the project has the potential to produce environmental impacts and would need to be evaluated. However, even with elimination of the intake/clarifier, as requested, this alternative retains its potentially significant energy and aesthetic impacts.

The analysis did find that distillation water could contain less sodium and chloride than reverse osmosis. However this does not outweigh the negative energy and aesthetic aspects of this alternative, as compared to the proposed reverse osmosis project.

The proposed reverse osmosis project will produce water which is superior in overall quality to the City's traditional supplies and will meet all applicable State and Federal water quality standards. The use of water treatment chemicals does not constitute an adverse environmental impact, and, as acknowledged by the commentor, the LT-MVC project would use equal amounts of chlorine for product water treatment. The proposed reverse osmosis project will dispose of all wastes in an approved manner and no significant adverse effects will occur related to waste disposal. The residue that will result from filtration and clarification of the incoming seawater will not constitute a hazardous solid waste as purported by the commentor.

Ionics has committed to mitigating noise impacts to insignificant levels and no unavoidable adverse significant noise impacts are predicted. Aesthetic impacts were assessed to be greater (<u>not</u> "comparable") for the LT-MVC proposal than for the proposed reverse osmosis project due to the large caisson/clarifier structure off the end of Stearns Wharf and due to the greater height and more industrial appearance of facilities at the LT-MVC desalination plant site. If the LT-MVC project were to adopt Ionics' proposed use of the abandoned outfall for the seawater intake, the LT-MVC would require an alternate location for clarification of seawater or would have similar onshore sludge disposal requirements as the proposed project. As acknowledged by the commentor, the LT-MVC project would require substantially more energy to operate.

Other inaccuracies in the commentor's comparison of LT-MVC versus reverse osmosis include:

- Long-term standby would require about 1.2 tons of sodium metabisulfite <u>not</u> 438 tons as listed in the commentor's table;

- The solid waste estimates presented by the commentor are high by a factor of three due to use of an incorrect conversion factor -- there are 27 cubic feet in a cubic yard, not nine as assumed by the commentor;

- The required feedwater for the project is actually "neutral", not "acidic" as listed in the table, and;

- The implication that LT-MVC distillation is not sensitive to oil and grease in the feedwater is not accurate since oil and grease can adversely affect the boiler and condensation components and/or can volatilize and be present in the product water.

In addition, the low figures listed by the commentor for chemical consumption for product water treatment and cleaning of the LT-MVC process are inconsistent with the requirements cited for this process by recognized authorities (CH_2M-Hill, Draft Technical Memorandum 1, Desalination Technology Alternate Review, Update of 1989 Goleta Water District Seawater Desalination Feasibility Study, November 1990).

The commentor's statement that LT-MVC is the environmentally superior project alternative is not supported by the available data. Seawater reverse osmosis has dramatically increased in market share of seawater desalination projects over the past 20 years, having gone from 2 percent of the market in 1969 to approximately 85 percent in 1989. Three other currently active seawater desalination projects in California (Marin County, San Luis Obispo, and Diablo Canyon) have chosen reverse osmosis technology as the proposed project versus any form of distillation.

Response 9-3: The commentor's contention that a reverse osmosis facility is sensitive to feedwater quality while LT-MVC is not, is inaccurate. Any seawater desalination process must take care to remove "solids, bio-organisms, oxidants, oil and grease" for proper operation. The LT-MVC proposal made use of a large offshore clarifier on the seafloor to remove solids and return them in concentrated form to the seafloor. Concentrating solids into a sludge of particulates prior to discharge into the marine environment is not considered environmentally superior to removing them to an onshore landfill.

An oil spill in the Santa Barbara Channel would render the LT-MVC facility inoperable as well as the proposed reverse osmosis facility if the spill was large enough and migrated to the vicinity of the seawater intake. The commentor's contention that the distillation process is "tolerant" of an oil spill is not credible since oil would foul the heat exchange surfaces and contaminate the product water with volatized oil fractions. Both reverse osmosis and LT-MVC are sensitive to a large oil spill but the risk and cost of membrane replacement or boiler fouling would be borne by the water purveyor, not by the City or the general public.

The basic protection for a desalination plant against oil spills, storm-caused turbidity, or other marine upsets is to temporarily shut-down. The reverse osmosis desalination plant proposed by Ionics has been sized to allow delivery of contracted water amounts with an allowance of 69 days of annual shutdown.

Response 9-4: The comment is incorrect in a number of respects. Refer to Table 2-7 (as revised) in the Final EIR. No chemical used is either "combustible or potentially explosive". Only one chemical, chlorine, is acutely hazardous and it is used by both RO and LT-MVC distillation processes. The previously proposed use of sulfur dioxide gas has been eliminated and the use of sodium metabisulfite (38% solution) has been substituted. Several optional cleaning chemicals have been eliminated including sodium dodecylsulfate and sodium hypochlorite. The listings for "alkaline cleaners" and "surfactant solutions" have been eliminated since they are merely descriptions of other chemicals listed and hence redundant. Note also that chlorine, sodium bisulfite and sodium hydroxide are listed more than once since they are used for more than one purpose but should not be counted as different chemicals.

As a result, only 15 chemicals are listed, not 19 as the commentor states. Of these, only seven (chlorine, ferric chloride, carbon dioxide, sodium bisulfite, antiscalant, sodium hydroxide, and zinc orthophosphate) are used regularly in the desalination process. The other nine chemicals are used only for cleaning or pickling, which are relatively infrequent events.

As previously stated in Response 9-2, the quantity and type of chemicals used for cleaning and product stabilization for the LT-MVC as stated by the commentor are low and seem inconsistent with those quantities listed by other authorities.

In any case, all chemicals (as the commentor noted) will be stored, used, and disposed of in a safe and regulatory agency approved manner, as described.

Response 9-5: The commentor's assertion that the proposed project will generate hazardous waste due to concentration of heavy metals present in the incoming seawater is incorrect based on data provided by Ionics. The material to be filtered from the seawater (estimated at 1.7 to 5.1 cubic yards per day) has been sampled in the vicinity of the proposed intake structure and analyzed for heavy metals. The samples were obtained by filtering the seawater through 5 and 8 micron filters to approximate the filtration that will be obtained in the three stages

of filtration in the proposed reverse osmosis plant. The results of the laboratory analyses performed by Coast to Coast Analytical Services (State certified laboratory) for two sets of samples obtained on February 13, 1991 indicate that the concentrations of metals in the backwash sludge will not be hazardous. Based on the samples taken, the residue in the cartridge filters and on the RO membranes will also not be hazardous. The data cited by the commentor was based on sediment core samples from the seafloor below Stearns Wharf and is not relevant to the assessment of sludge residue composition. However, even those samples are below hazardous limits.

The calculated metal concentrations in the backwash sludge are presented in the attached tabular comparison (Table 9-5-1), along with the concentrations detected in the ocean floor sediment samples. The analysis results are compared to Total Threshold Limit Concentrations (TTLC) from Title 22, California Code of Regulations (CCR), which established levels that are considered to be hazardous from a regulatory standpoint. Soluble Threshold Limit Concentrations (STLC) were not analyzed since they can not exceed 10 percent of TTLC values and no STLC limits (Title 22) would be exceeded based on the TTLC values which are presented in Table 9-5-1.

The proposed 10,000 AFY project is estimated to result in the following average annual solid waste disposal requirements: membranes = 50 cubic yards per year and filter cartridges = 26 cubic yards per year. Based on the test results, neither membranes or cartridges will be considered hazardous waste or require special disposal requirements.

Contrary to the commentor's contention, the proposed project will not require "almost daily" truck trips to dispose of hazardous waste. Based on the test results, the sludge residue will not be considered hazardous and the use of 30 cubic yard capacity trucks (as used by the El Estero WWTP facility) will limit sludge residue disposal truck trips to about one per week.

Refer to Responses 9-24 and 9-25 which elaborate on the data presented in Table 2-7 of the EIR regarding membrane cleaners, usage, quantities, and disposal to the City sanitary sewer following neutralization.

The commentor's comparison of RO desalination versus the LT-MVC proposal fails to acknowledge that the large caisson/clarifier off the end of Stearns Wharf which was proposed for the LT-MVC project would have collected, concentrated, and discharged

Table 9-5-1. HEAVY METALS SUMMARY FOR BACKWASH SLUDGE AND OCEAN FLOOR SEDIMENT SAMPLES

Constituent	Calculated Metal Concentration in Backwash Sludge (Expressed as mg/kg, 50 percent Solids)[a] 13 Feb	13 Feb	Metal Concentration Detected in Ocean Floor Sediment Core Samples (mg/kg)[b]	Wet Weight TTLC (mg/kg)[c]
Antimony	<7	<7	14	500
Arsenic	5.5	4	1.5	500
Barium	170	<70	--[d]	10000
Beryllium	<10	<10	--	75
Selenium	<7	<7	ND[e]	100
Cadmium	<10	<10	ND	100
Chromium	340	150	10	2500
Cobalt	<20	<20	--	8000
Copper	50	31.5	0.8	2500
Lead	30	20	6.9	1000
Molybdenum	<40	<40	--	3500
Mercury	0.5	0.6	ND	20
Nickel	160	65	9	2000
Silver	<10	<10	0.1	500
Thallium	<70	<70	ND	700
Vanadium	40	15	--	2400
Zinc	150	200	4.3	5000

[a] Source: Coast to Coast Analytical Services, Inc. analyses of filter sludge collected on the date indicated by filtration of seawater at the location of the proposed intake using filters corresponding to the desalting process filter effectiveness.

[b] Source: Woodward-Clyde Consultants "City of Santa Barbara Water Supply Project: Analytical Laboratory Results for Water Quality and Sediment Samples Obtained on July 26, 1990 in Study Area South of Stearns Wharf."

[c] Total Threshold Limit Concentration (TTLC), Title 22, California Code of Regulations.

[d] No data.

[e] Not detected.

inorganic and organic materials directly into the ocean. If the caisson/clarifier was omitted due to switching to use of the old outfall for the seawater intake, the commentor has failed to identify how suspended solids in the seawater would be removed prior to distillation, and where the solids would be disposed of.

Response 9-6: Water quality consists of many elements. The water to be produced by the proposed reverse osmosis project is lower in TDS and hardness than either the City's traditional surface or groundwater supplies. The finished product water will also have lower THM and THM formation potential than the City's surface water supplies. It will also have better aesthetic quality than City groundwater or treated surface water since it avoids problems caused by algae, iron, manganese, and hydrogen sulfide which have previously led to customer complaints. The finished water will have higher sodium and chloride levels than the City's current supplies but within both State and Federal standards. If further reduction in these constituents should be desired at any time in the future, it will be possible to add second stage treatment at lower total and energy costs than for LT-MVC.

Refer to Responses 7-1 through 7-4 for more information regarding public health and irrigation related considerations.

Response 9-7: The current EPA and State limit for THMs is 100 ppb; Ionics' estimated value for the water to be produced by the proposed facility is 25 ppb. The range of Santa Barbara's surface water supply in 1989 was 0 to 85 ppb with an average of 55 ppb, thus the water to be produced by the proposed desalination facility is superior to the City's traditional surface water supplies from the standpoint of THM content and potential carcinogens. A December, 1990 publication of the American Water Works Association quotes Stig Regli of the EPA Office of Water as follows: "Disinfection by-products regulatory issues present a trade-off between microbiological risks and chemical contamination. The agency is currently considering a maximum contaminant level (MCL) for total trihalomethanes (TTHMs) of from 50-100 ppb rather than the 25-50 ppb range previously under discussion." Therefore, the estimated 25 ppb level from the proposed project will be half of the lowest level currently being discussed for THM content.

The potential formation of carcinogens in potable water supplies is, and always has been of the utmost concern to the City of Santa Barbara. In regard to the new source of potable water to be provided through desalination of seawater, the City has had several contacts with the Marin Municipal Water District (MMWD), which has operated two desalination

pilot plants. Early contact was made with Bob Castle, Senior Engineer and Project Manager for the MMWD pilot plants. Mr. Castle mentioned the potential for THM formation associated with the use of chlorine as a general concern. Subsequent City of Santa Barbara staff discussions have been with Randy Poole, Engineering Manager of the MMWD, and Chris Martin, Chemical Engineer with Boyle Engineering, which has managed the water quality testing for the Marin pilot plants.

Potential use of chlorine was dismissed by MMWD early on due to potential damage by chlorine to reverse osmosis membranes. However, as described in the EIR, the Ionics project will dechlorinate the water before it passes through the membranes, diminishing the chances of membrane damage due to chlorine. In addition, MMWD's concern with membrane replacement is that should it be necessary, it would be at the cost of the District, because they are going to build and operate their plant. However, Marin informed Santa Barbara that they know that Ionics will build and operate the Santa Barbara plant, therefore if the membranes fail, it will be Ionics' cost. Marin officials also reported that they know that Ionics has had extensive experience operating reverse osmosis seawater desalting plants which use chlorine.

Marin's testing of the effect of chlorine on THMs was limited to a "maximum THM formation potential" test. In this test, seawater is put in a worst case situation with a high dose of chlorine, a long contact time (up to seven days), and a high pH (9.2) condition to promote the maximum THM formation. In Marin, this test did result in high THM levels for San Francisco Bay water. However this test was directed at ascertaining the maximum THM formation potential under unrealistic conditions (prior to processing through reverse osmosis membranes). According to Marin officials, the more relevant test for THM's involves mixing seawater with the actual amounts of chlorine which will be used in the desalination plant, having the chlorine in contact with the water for the actual time that it will be in the plant and with a neutral pH.

MMWD never ran this type of actual condition THM test. They did however, test ultra-violet and ozone as alternative biocides to chlorine, under actual conditions in their two pilot plants. Ozone caused the formation of formaldehyde, a toxic substance.

Seawater samples taken by Ionics from the location of the proposed Santa Barbara seawater intake have been tested for THM formation by Coast to Coast Analytical Services which is certified by the California Department of Health Services for water testing. THM results

Table 9-7-1. TRIHALOMETHANE (THM) ANALYSIS OF SEAWATER (Units: Micrograms/Liter [ppb])

Item	Detection Limit	Potential Maximum	Chlorine Exposure Corresponding to Desal Process			Chlorine Exposure in Excess of Desal Process	
Sample Date	--	11 Dec	16 Nov	16 Nov	16 Nov	10 Jan	10 Jan
Chlorine Contact Time/Hours	--	168.0	0.5	0.5	0.5	1.0	2.0
Contact pH	--	9.2	7.11	7.07	6.94	7.0	7.0
<u>Constituent</u>							
Bromodichloromethane	0.5	0.8	ND[b]	ND	ND	ND	ND
Bromoform	0.5	580.0	23.0	26.0	23.0	18.0	22.0
Chloroform	0.5	2.6	ND	ND	ND	ND	ND
Dibromochloromethane	0.5	20.0	ND	ND	ND	ND	ND
BTAL Trihalomethane	0.5	600.0	23.0	26.0	23.0	18.0	22.0

[a] Analyses performed on samples provided by Ionics to Coast to Coast Analytical Services (Goleta, CA).

[b] ND = None Detected

for the conditions most closely approximating the Santa Barbara pretreatment process varied from 23 ppb to 26 ppb. These results, shown in Table 9-7-1 are well below the Federal/State standard of 100 ppb, or even 50 ppb if the standard is changed in the future.

According to an independent analysis by CH_2M-Hill (Bedford, 1991) of the available data including laboratory results provided by Ionics, the data clearly demonstrate the total trihalomethane (TTHM) concentration anticipated to be formed as a result of prechlorination prior to membrane treatment is less than the current EPA drinking water standard of 0.10 mg/l (100 ppb). According to the independent reviewers, the membrane process will effectively remove most THM organic precursors and additional THM formation of the desalted water supply will be minimal. These data assume the actual RO pretreatment process will require less than 5 mg/l of prechlorination and the total contact time prior to dechlorination is less than 30 minutes. Once the system is operational these process criteria can be verified. The EPA is currently considering lowering the total THM concentration as well as MCLs for individual THM species, as discussed earlier in this comment response. However it is taking the EPA a long time to develop the necessary data base to establish these standards and, as a result, proposed MCLs may not be available until 1993 and final MCLs until 1994 or 1995 (Bedford, 1991).

MMWD officials pointed out that there are differences between San Francisco Bay water and ocean water which can affect the amount of treatment needed to remove bacteria and viruses, and hence the formation of harmful substances related to use of biocides. Bay water is fed by several rivers, is high in turbidity and organic matter, is shallow, which allows sunlight to reach more of the water column and potentially create more organic matter, and the Bay is more of a closed system in relation to flushing of contaminants in comparison to the ocean.

As the certified lab test results show, and as information from MMWD reinforces, the Santa Barbara temporary emergency desalination project should not generate significant adverse impacts associated with THM formation related to chlorine.

Ultraviolet treatment has uncertain efficiency for large desalination plants. It has been used in small plants such as Diablo Canyon and Chevron Gaviota. Ozone use has resulted in the formation of toxic formaldehyde. According to MMWD officials, chlorine is used in most seawater reverse osmosis plants. The State Department of Health Services is responsible for protection of human health related to water quality. The bacteria and virus content of drinking water are viewed as the most immediate threats to human health. Maintenance of a high level of biocide effectiveness is stressed. Chlorine is a proven and efficient method

of protecting human health. Chlorine is an environmentally acceptable treatment for disinfection.

Response 9-8: Ionics has committed to reducing all operational noise impacts to acceptable levels in accordance with applicable regulations. Noise reducing insulation will be installed in the compact, contained, trailer mounted units which will house the high pressure pumps. Other noise mitigation will be implemented as necessary and noise monitoring will be conducted to assure compliance with applicable noise standards. Refer to Section 3.5 of the EIR for more information.

Response 9-9: As pointed out by the commentor, the LT-MVC project would require substantially more energy to operate than the proposed reverse osmosis project. The proposed reverse osmosis project will consume about 21 kwh/1000 gallons of output or about 7000 kwh/acre foot. This total includes 16 kwh/1000 gallons for the RO pumps and the balance for auxiliary pumping. The LT-MVC project would have used about 36 kwh/1000 gallons or about 11,800 kwh/acre foot or almost 70 percent more energy. The lower figure of 30 kwh/1000 gallons cited by the commentor in the back-up materials does not include auxiliary pumping and is thus incomplete.

The City considered cogeneration during the Alternative Water Supply Selection Process but it was deleted from further consideration due to high capital costs and air quality permitting concerns for this temporary emergency desalination project. It is not considered likely that a cogeneration facility with its associated air emissions could be permitted and on-line within the necessary time frame (i.e., by early 1992).

Response 9-10: Refer to Response 9-2. The conceptual plans for the LT-MVC project which were submitted by the commentor showed that the LT-MVC facility would be an industrial appearing facility of 50 percent (10 feet) greater height then the proposed reverse osmosis project. The increased height and industrial appearance of the LT-MVC facility would result in greater visual impacts than the proposed reverse osmosis project. The ability to lower the LT-MVC facility below grade to lessen visual impact as suggested by the commentor is limited by the shallow depth to groundwater and related geologic hazard concerns of locating the foundations below the groundwater table. This suggestion would also result in a potentially significant impact related to truck traffic generated by the export of excavated material.

The offshore LT-MVC project facilities including the large caisson/clarifier structure off the end of Stearns Wharf were also determined to be unsightly and out of character with the wharf, a popular tourist attraction.

Response 9-11: Although the proposed project is by definition a temporary emergency desalination project, the statement that distillation projects have a longer useful life is misleading. The operation and maintenance costs for reverse osmosis provide ample allowance for replacement of membranes and other parts on an indefinite basis. Furthermore, in view of continuing improvements in RO membrane technology, it is expected that future replacement membranes will have improved performance over those initially installed.

Refer to Response 9-2 for more information regarding the "maturity" of RO technology versus distillation.

Response 9-12: The commentor's statement that "Based on a lifecycle cost analysis, the LT-MVC distillation facility would produce water for less than the proposed RO project" is not accurate. Based on the data contained in the bids received by the City on July 24, 1990, both the capital and operating costs for the proposed reverse osmosis project at capacities of 5000, 7500, and 10,000 AFY are less than those for LT-MVC. Furthermore, if one were to extrapolate such costs over a longer cycle than 5 to 10 years, the operation and maintenance margin favoring RO would be expected to be even greater due to LT-MVC's much higher energy consumption. Energy costs are expected to rise faster than other costs over the next 10 to 30 years.

Response 9-13a: Refer to Response 7-6.

Response 9-13b: The EIR has not identified any unavoidable significant adverse impacts. Alternatives have been analyzed to the extent required by CEQA.

Response 9-14: Refer to Response 9-2, and Responses 9-3 through 9-10.

Response 9-15: Refer to Response 8-1.

Response 9-16: Refer to Response 9-1. CEQA provides that only comments from Responsible Agencies need be addressed. However, all comments submitted on the NOP were considered and addressed, as appropriate. Comments that do not pertain to potentially significant environmental effects, but instead to engineering and/or operating cost considerations have been considered as appropriate by Ionics. A substantial portion of this commentor's points are in the "non-environmental" category.

Response 9-17: Comment noted. Refer to Response 9-3.

Response 9-18: Refer to Response 9-5.

Response 9-19: Based on seawater sampling in the vicinity of the proposed seawater intake the lead concentration was 0.005 mg/l. The lead concentration detected in the seawater sample obtained by Woodward-Clyde Consultants was not taken from the vicinity of the intake but instead in the vicinity of Stearns Wharf (previously considered intake location) which may explain the discrepancy. Obviously seawater samples obtained at the actual proposed intake location are more relevant. The analysis of the seawater sample obtained from the intake area indicates that El Estero's waste discharge limitations for lead will not be exceeded due to addition of the brine. The sediment sample results which are referenced by the commentor pertain to core samples obtained from the seafloor in the vicinity of Stearns Wharf and are not relevant to the commentor's discussion of suspended solids in the incoming seawater feed for the desalination facility.

Response 9-20: Refer to Response 9-5.

Response 9-21: The commentor's assertion that the estimated quantity of solid waste backwash from the proposed project is low by more than a factor of four is incorrect. The commentor selected a concentration of 50 mg/l for suspended solids to perform the calculation while the EIR data indicates that the suspended solids will actually range from 10 to 50 mg/l in the incoming seawater to be desalinated. In addition, the commentor has assumed that there are 9 cubic feet in a cubic yard -- there are actually 27 cubic feet in a cubic yard. This mistake in the calculation methodology used by the commentor results in an overestimation of 300 percent alone, not counting the worst case assumption regarding suspended solids which is not realistic considering average ocean conditions. Ionics' estimate of 1 to 2 trucks per week associated with solid waste disposal is not low. The commentor also assumed that trucks used to haul solid wastes would have a capacity of 7.5 cubic yards -- in actuality they will be about 30 cubic yard capacity as utilized by the El Estero WWTP. The commentor's statements regarding the hazardous nature of the solid wastes to be generated by the project are also incorrect based on the filter residue samples which were collected and analyzed (refer to Table 9-5-1 in Response 9-5). Refer to Response 9-5 for more information. No significant effects related to solid waste disposal are expected.

Response 9-22: The commentor incorrectly claims that there has not been data provided regarding the clarifier or dewatering filter press in the EIR, and that there is probably not enough room at the site for these facilities without reducing the capacity of the desalination facility. In actuality, both of these facilities are addressed in the EIR. The clarifier is shown on the artist's rendering in the lower left hand corner (tank structure), and on Figures 2-3 and 2-5 on the northeast corner of the site. As listed on the figures, the backwash clarifier is 20 feet tall (i.e., tallest structure at site). The dewatering filter press is also shown on Figures 2-3 and 2-5 to the west of the backwash clarifier; due to space limitations on the

figures, the press was not labeled. Labels for the dewatering filter press have been added to Figures 2-3 and 2-5 in the Final EIR.

Response 9-23: Refer to Response 9-5. The DEIR does not identify Tajiguas landfill as the disposal site for project related solid waste disposal as stated by the commentor. Tajiguas is identified as a possible disposal site (non-hazardous wastes) that is the closest potential disposal site. Testing will be done for all solid and liquid waste streams that require offsite disposal in accordance with approved methods during the initial plant start-up/shakedown period and specific disposal requirements will be ascertained at that time. All applicable regulations and requirements will be adhered to and no significant effects are predicted.

Response 9-24: Membrane cleaning will not be a continuous operation. Approximately one-fourth of the installed membranes will be cleaned per cleaning event. The cleaning frequency will depend upon the degree and nature of foulants and/or scale on the RO membrane surfaces. Similarly, the use of specific cleaning chemicals will also depend on the degree and nature of foulants and/or scale on RO membrane surfaces. Typically, alkaline cleaners are needed to remove organic fouling including biological matter whereas acid cleaners are used to remove calcium carbonate scale and other inorganic precipitates including iron. Estimated concentrations of cleaning chemicals in the cleaning solution are included in Table 2-7 of the EIR. Approximately 12,000 gallons of cleaning solution will be required to clean one-fourth of the membrane elements required for the proposed 10,000 AFY facility or a total of 48,000 gallons per full cleaning cycle for the proposed 10,000 AFY facility. Approximate chemical consumption per cleaning cycle for the 10,000 AFY plant will be as follows depending on the type of cleaning solution utilized (refer to Table 2-7 in EIR for definition of chemical abbreviations):

<u>Alkaline Cleaners</u>

Type A: 0.1% NaOH = (400 pounds of NaOH)
0.1% Na-EDTA = (400 pounds of Na-EDTA)

<u>or</u>

Type B: 1.0% STP = (4,000 pounds of STP)
1.0% TSP = (4,000 pounds of TSP)
1.0% EDTA = (4,000 pounds of EDTA)

<u>or</u>

Acid Cleaners

Type A: 0.5% HCL = (240 gallons of HCL)

or

Type B: 2.0% Citric Acid = (8000 pounds of Citric Acid)

It is estimated that about four cleaning cycles will be required on an annual basis. The proposed membrane cleaning system is a CIP cleaning system (CIP = "clean in place").

It is also estimated that approximately 125,000 gallons of water will be required to flush RO membranes per cleaning cycle for the proposed 10,000 AFY facility. This results in an estimated total liquid discharge to the sanitary sewer (following membrane cleaning) of about 192,000 gallons per cleaning cycle.

Response 9-25: The cleaning solutions to be used are discussed in Response 9-4, and they will be significantly diluted by rinsing operations and neutralized prior to discharge to the sanitary sewer to meet City of Santa Barbara waste disposal requirements. This will normally entail adjusting the pH to the range of 6.0 to 10.0 using either caustic soda or carbon dioxide. The resulting solution will contain a combination of sodium salts of phosphates, chlorides, and carbonates.

These solutions are not expected to be considered hazardous and/or toxic. As mentioned in Response 9-23, all liquid waste streams will be tested prior to discharge during initial plant start-up operations to ascertain specific characteristics and disposal requirements. The City will require compliance with sanitary sewer discharge limitations via the Industrial Waste Discharge Permit process which will preclude significant environmental effects. Additional treatment will be performed, if necessary, to meet City discharge requirements. All liquid waste streams will be disposed of in an approved manner as stated in the EIR.

Response 9-26: The EIR presents data on chemical storage and use in Table 2-7 for all chemicals which were planned for use by the project. In addition, data on potential hazards including concentrations, material states (e.g., gas or liquid), etc. for chemicals of potential concern are included in Table 3.6-1. Potential risks associated with chemical use are presented in Section 3.6 of the EIR. No significant effects are predicted.

Several changes to planned chemical usage have been made by Ionics since issuance of the DEIR. The planned changes consist of replacing sulfur dioxide with sodium metabisulfite and deleting use of sodium dodecylsulfate as a membrane cleaning chemical.

There is no CEQA requirement for inclusion of Material Safety Data Sheets (MSDSs) in an EIR. MSDSs will be provided to appropriate regulatory agency personnel and kept onsite for use by plant and fire department personnel, as appropriate. Ionics has never proposed to use "sodium orthophosphate" and does not believe such a chemical exists, thus it is not possible to provide a CAS number as requested by the commentor.

All chemicals will be used in accordance with strict regulatory requirements and special precautions are included in the project design to prevent an accidental release/exposure to the public, including secondary containment of storage areas and piping, etc. No significant effects are predicted under normal operating conditions, and the risk of upset is considered to be acceptable based on compliance with the strict hazardous material transport, storage, use, and disposal requirements of various governmental agencies.

Response 9-27: Refer to Responses 2-2 and 9-7.

Response 9-28: The commentor has misinterpreted the data presented in the DEIR regarding chlorination of the offshore seawater intake. Ionics plans to chlorinate the intake on an infrequent basis, if necessary, using one 150 pound chlorine cylinder. Ionics plans to normally rely on mechanical cleaning of the intake system with a "pig." If this is unsuccessful, chlorine will be introduced via a dedicated manifold system directly into the intake while it is flowing landward. No adverse effects to marine life/water quality are expected since Ionics proposes to introduce the chlorine inside the flowing intake system and chlorine will only move towards the desalination plant, not into the marine environment.

Response 9-29: In cases where significant adverse impacts have not been identified, it is acceptable standard practice to develop specific mitigation measures prior to issuance of building permits. In this case the City has gone over and above standard practice in that the Geotechnical Study has been finalized and is presented in Appendix F of the Final EIR. The findings and recommendations in the Geotechnical Study do not substantially alter the project and there are no changes to the impact findings for geology or other topics related to the recommendations in the Geotechnical Study.

The Geotechnical Study for the proposed temporary emergency desalination project has been completed by Staal, Gardner & Dunne, Inc., Consulting Engineers and Geologists.

The purpose of the study was to provide preliminary foundation design and construction recommendations together with seismicity and liquefaction studies for the proposed project. The Study has been reviewed by City Building, Engineering and Planning Staff who concur with the Study's information and conclusions, which are summarized below.

The Geotechnical Study is contained within Appendix F of the Final EIR (available under separate cover). The study recommends that all recommendations contained within the Study be incorporated into the EIR as applicant proposed mitigation measures, since Ionics has committed to adoption of all such recommendations. With incorporation of the applicant proposed mitigation measures contained in the Study, no significant impacts should occur.

The project as studied consists of the main desalination facility on Yanonali Street, the pump station and chemical facility on the El Estero WWTP site, and a new seawater intake pipeline between the desalination facility and the pump/chemical station.

Work performed for the Study included:

- Review of previous geotechnical investigations and reports;
- Subsurface exploration;
- Laboratory testing;
- Seismicity analysis;
- Liquefaction potential evaluation; and
- Foundation analysis.

Based on subsurface exploration, results of laboratory testing, engineering analysis, and engineering experience and judgement, the Study concludes that the development of the desalination facility and associated improvements are feasible from a geotechnical standpoint, with incorporation into the project design and construction of all recommendations.

The analysis indicated that either mat foundations or piles driven to dense granular materials may be used to support the proposed structures. The proposed project currently

involves use of mat foundations. If mat foundations are used, limited overexcavation and recompaction of the subsurface materials will be required prior to construction.

Fill material with a low expansion potential will be required to replace the losses due to removal of debris/trash, roots, wet and expansive clayey soils, utility lines, large cobbles and boulders (if any), and shrinkage due to recompaction.

In general, most of the surficial soils were considered to be low in expansion potential. However, based on the results of subsurface explorations and engineering experience and judgement, locally some fill soils may have medium to high expansion potential.

Strong Ground Motion

Based on available literature on recent earthquakes, there is a possibility the estimated ground acceleration at both sites may be amplified due to the presence of soft sediments. There may be minor settlements associated with this ground motion. It may be prudent to provide flexible joints/connections for all utility lines above and below groundsurface so that they are not damaged if differential settlements up to several inches are experienced.

Ground Rupture

Based on the lack of known active or potentially active fault traces at the site, the likelihood of ground rupture due to faulting is low.

Soil Liquefaction

Liquefaction is the loss of strength of cohesionless soils (sandy soils) when the pore water pressure induced in the soil due to earthquake motions becomes equal to the confining pressure. The primary factors influencing liquefaction potential include depth of groundwater, soil type, relative density of sandy soils which is related to Standard Penetration testing blow counts, confining pressure, percentage of fine sand, and intensity and duration of ground shaking. Liquefaction potential is the greatest in saturated, loose, poorly graded, fine sands with a mean grain size in the range of 0.1 to 0.5 millimeters. Generally the potential for liquefaction is not considered to be critical at depths greater than 40 feet.

The majority of materials encountered below groundwater at both sites were clayey-type soils. Even the four foot thick layer of sandy soil encountered at a depth of 25 feet was tested as very dense and consisted of a relatively large percentage of silt and clay. Due to

the presence of relatively very thick layers of clayey soils at the site, presence of relatively dense sandy soil, lenticular nature of sandy soils, and proposed six foot thick compacted soil mat at the foundation locations, the likelihood of damage to the proposed structures due to soil liquefaction is very low.

Lateral Spreading

Due to the absence of a continuous liquefiable soil stratum beneath the sites and also the presence of very gently sloping topography (less than 1% slope), lateral spreading is not anticipated to occur.

Tsunami

The project site is within the potential extent of a tsunami, and could thus presumably suffer damage should such an event occur. If such an event occurred, the entire waterfront area including the El Estero WWTP would likely incur flooding damage.

All structures, grading and foundation plans shall be reviewed and evaluated by qualified professional engineers and geologists, as appropriate, to ensure that plans and specifications are in general agreement with the recommendations presented in the Study.

Based on the test results presented in the Study, and with implementation of all recommended mitigation measures as appropriate, there should be no significant adverse geotechnical impacts for the temporary emergency desalination project.

Response 9-30: The EIR assesses potential affects of RO water quality on human health in Section 3.7. All State and Federal water quality standards will be met thereby protecting human health. Refer to Response 7-2 regarding agricultural irrigation and the use of reclaimed water.

Response 9-31: Adding a second pass treatment as recommended by the commentor is not necessary to meet current water quality standards. A second pass treatment may be considered in the future if necessary to meet potentially more restrictive future standards.

Response 9-32: Data regarding performance losses are not pertinent to the assessment of potentially significant adverse environmental effects. Performance losses were considered by Ionics during the design of the proposed project including the determination of the cost of delivered water to the City. The estimated energy requirements for the project include consideration of membrane degradation over time.

Response 9-33: The County of Santa Barbara prepared a Hazardous Waste Management Plan (HWMP) in accordance with Assembly Bill 2948. This plan was adopted in December of 1990 and also applies to hazardous waste generation in the City of Santa Barbara. Based on the available data, the solid and liquid waste streams associated with the proposed project will be non-hazardous and thus will not be subject to review under the HWMP. Refer to Responses 9-5 and 9-25 for more information.

Response 9-34: Refer to Response 8-1.

Response 9-35: Refer to Response 9-4 and Section 3.6 (Risk of Upset) of the EIR regarding Risk of Upset. No unavoidable adverse significant effects related to chemical use are predicted for the proposed reverse osmosis desalination project. Comments regarding LT-MVC are noted.

Response 9-36: Refer to Response 9-18.

Response 9-37: Refer to Response 9-24 regarding membrane cleaners. Data regarding pickling chemicals are presented in Table 2-7 of the EIR. No significant effects are predicted associated with use or disposal of cleaning or pickling chemicals. All disposal will be in accordance with City requirements regarding Industrial Discharges to the sanitary sewer.

Response 9-38: Refer to Responses 7-3 and 9-7.

Response 9-39: Refer to Responses 7-2 and 7-4.

Response 9-40: Comment noted.

Response 9-41: Refer to Response 9-10.

Response 9-42: Comment noted. Refer to Response 8-1.

Response 9-43: Refer to Response 9-12

Response 9-44a: The question "Does the project have the potential to achieve short-term, to the disadvantage of long-term goals?" is required to be addressed in the determination of whether to prepare an EIR. This question was included and discussed in the Initial Study. The issues raised were further analyzed in the EIR and found not to result in significant unmitigable impacts. In addition, CEQA Section 15127 does not require discussion of this issue for this type of project.

Response 9-44b: Refer to Response 7-6.

Response 9-45: Comment noted. Refer to Response 4-1.

Response 9-46: Refer to Response 9-1.

Response 9-47: Comments noted.

Response 9-48: Comments noted.

County of Santa Barbara
AIR POLLUTION CONTROL DISTRICT
26 CASTILIAN DRIVE B-23, GOLETA, CALIFORNIA 93117
PHONE: (805) 961-8800 FAX (805) 961-8801

JAMES M. RYERSON
Air Pollution Control Officer

WILLIAM A. MASTER
Assistant Director

RECEIVED

JAN 29 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

January 22, 1991

Mitch Oshinsky
City of Santa Barbara
630 Garden St.
Santa Barbara, CA 93102

Re: DEIR for the Temporary Emergency Desalination Project (SCH# 9010859)

Dear Mr. Oshinsky:

Thank you for the opportunity to review the referenced document. Our comments regarding this DEIR follow.

1. **Page 2-9, Summary of Potentially Required Permits, Approvals Or Authorizations.** This project may require a Santa Barbara County Air Pollution Control Authority To Construct (ATC)
10-1 permit for the containment unit and/or the control device
used in the event of an upset condition of an acutely
hazardous material (AHM) per Article 80 of the Uniform Fire
Code. The AHMs of concern are chlorine and sulfur dioxide.

2. **Page 2-28, Estimates of Construction Equipment.** Air pollution emissions generated from construction equipment should be calculated and compared with the significance thresholds for construction impacts listed in the "Santa
10-2 Barbara County Environmental Thresholds and Guidelines
Manual." If construction impacts are potentially
significant, mitigation measures should be proposed. An
example of typical mitigation measures for construction
equipment is attached in the "Assessment of Air Quality
Issues in EIS/Rs".

3. **Pages 3-100 and 3-101, Energy Use.** The EIR states that there is sufficient capacity within SCE's grid to supply 8 MW of electrical power over the five year project life without adding any new generating sources. The EIR should
10-3 verify that the increased energy demand will not cause
increased air pollution emissions. Additionally, the EIR
should discuss whether the Ellwood Peaking Station will
operate more frequently due to the increased energy demand
from this project.

10-4 4. **Page 3-65, Risk of Upset, first partial paragraph.** This section states that the proposed project will adhere to the Uniform Building code, Article 80 of the Uniform Fire Code. Please note that the containment unit and/or control device used for scrubbing or diffusing accidently released AHMs may require an ATC permit from the APCD.

10-5 5. **Page 5-1, Growth Inducement.** This section states that use of water from the desalination facility shall be limited to replacement of supplies lost due to the drought and, therefore, are not growth inducing. This applies both to the City of Santa Barbara and to potential customers in neighboring communities. Please note that if water production/use is expected to go above replacement levels, additional environmental review will be necessary. The additional review should consider the effects of growth inducement on air quality. To comply with CEQA, projects must be consistent with the Santa Barbara County Air Quality Attainment Plan (AQAP).

If you should have any questions regarding this letter, please feel free to call me at 961-8912.

Sincerely,

Jean Thomson

Jean Thomson
Air Quality Specialist

Attachments (Assessment of AQ in EIS/Rs)

cc: Jerry Schiebe, APCD Engineering Division
Woodward-Clyde Consultants
Project File (SB-106-90)
PLNG Chron File

10-2

ATTACHMENT

Assessment of Air Quality Impacts in EIRs

This attachment summarizes some of the key elements that should be included in the air quality analysis of EIRs, including the environmental setting, environmental impacts, toxic emissions, and mitigation measures.

1.0 ENVIRONMENTAL SETTING

The environmental setting is the baseline against which environmental impacts are measured. The environmental setting should be described from both a local and regional perspective and should include the following.

1. Current Federal, State and District rules and regulations, including emission standards, ambient air quality standards, and allowable increments of air quality degradation.

2. A description of climatological, meteorological and topographical features, including a discussion of how these features may cause or contribute to the County's air pollution problems.

3. Air pollution problems within the County, including both regional problems, such as ozone, and more localized conditions such as carbon monoxide (CO) "hotspots" (specific locations, particularly roadway intersections, where CO concentrations can be high).

4. Recent monitoring data from the nearest representative air monitoring station(s).

5. Consistency with the Santa Barbara County Air Quality Attainment Plan.

It may be appropriate to incorporate by reference relevant portions of previously completed environmental documents in describing the environmental setting. If this is done, summarize the incorporated material, describe its relationship to the project, and cite (reference) the specific source document for this material.

2.0 ENVIRONMENTAL IMPACTS (Project Effects)

The Environmental Impacts section of the document should include the following elements.

1. The impact analysis should include both the short-term construction (including modifications) and the long-term operation phases of the project. Pollutants of concern include oxides of nitrogen (NO_x), reactive hydrocarbons (RHC), total suspended particulates (TSP), (particulate matter less than ten (10) microns in diameter) PM_{10}, carbon monoxide (CO) and sulfur dioxide (SO_2).

   For the construction period, maximum hourly and daily emissions of each pollutant should be estimated, as well as a total emission rate over the anticipated construction period.

2. The actual emissions calculations.

3. Project emissions during both construction and operation should be discussed with respect to the applicable ambient air quality standards.

4. The types and quantities of hazardous materials (if applicable), as well as the specific treatment and storage methods used.

5. Toxic air emissions (if applicable).

6. The analysis methodology (particularly with regard to emission estimates), including input data, assumptions, and significance criteria used.

7. Unavoidable impacts, including the residual effects when impacts are still significant despite mitigation measures.

8. Cumulative impacts: consider past, present, and future projects producing related impacts. (Cumulative impacts may be significant even though project-specific impacts may be small.)

9. Mitigation measures for both the construction and operation phases. Discuss the effectiveness of each proposed measure, as well as possible secondary effects (e.g., the use of chemicals to control fugitive dust on unpaved roads may affect the biota). Explain the rationale if mitigation measures are considered but rejected.

10. Alternatives to the proposed project.

11. Potential direct and indirect growth inducement by the project.

3.0 TOXIC AIR EMISSIONS

The effects of toxic air contaminants are an increasingly inportant segment of air`quality impact assessments. The number of airborne compounds recognized as toxic is increasing, and information about their health effects from both long and short term exposure has only recently become available. If a project releases, has a potential to release, or causes to be released (i.e., indirect emission) any toxic air pollutants, possible impacts should be assessed. It is possible for a project to emit both toxic and criteria pollutants simultaneously. Regulations for toxic air contaminants at the federal, state, and local level are being developed at a rapid pace. If a project may emit toxic air contaminants, the impacts and potential risk should be discussed in the environmental document. Additional guidance is available through the District's Air Toxic Program Coordinator.

Some classifications of projects are more likely than others to emit toxic pollutants. Projects involving the following commercial or industrial activities may be associated with the listed chemicals:

Activity	Chemical
Dry Cleaning	Tetrachloroethylene (Perchloroethylene) Carbon Tetrachloride
Medical Sterilization	Ethylene Oxide
Rubber/Plastic Fabrication	Xylene
Electronic and Parts Manufacturing	1,1,1 Trichloroethane and other chlorinated hydrocarbon solvents
Funeral Homes	Formaldehyde

Table 3-1 lists potentially toxic chemicals under study by the ARB.

Table 3-1

California Air Resources Board
Status of Toxic Air Pollutant Identification
(Source: ARB, February 1989)

I. Substances identified as Toxic Air Pollutants pursuant to the provisions of AB 1807:

Asbestos	Dibenzofurans (15 species)
Benzene	Hexavalent chromium
Cadmium	Ethylene dibromide
Carbon tetrachloride	Ethylene dichloride
Chlorinated dioxins	Ethylene oxide

II. Substances currently under review, scheduled for review, or nominated for review for identification as Toxic Air Contaminants.

A. Substances already in the review process:

Chloroform	Nickel
Formaldehyde	Perchloroethylene
Inorganic arsenic	Trichloroethylene
Methylene chloride	Vinyl chloride
1,3-butadiene	

B. Substances not yet under review:

Acetaldehyde	2,4,6-trichlorophenol
Acrylonitrile	Inorganic lead
Beryllium	Mercury
Ethyl acrylate	N-nitrosomorpholine
Coke oven emissions	PAHs
Dialkylnitrosamines	PCBs
1,4-dioxane	Radionuclides
Para-dichlorobenzene	Environmental tobacco smoke
Propylene oxide	Hexachlorobenzene
Styrene	4,4-methylenedianiline
Toluene diisocyanates	Di(2-ethylhexyl)phthalate
Dimethyl sulfate	

III. Compounds for which health effects information is limited or not yet sufficient to support review:

(Substances in this category are produced and emitted to the air in quantities which might be of concern when information on health effects is strong enough to support review.)

Acrolein	Manganese
Allyl chloride	Methyl bromide
Benzyl chloride	Methyl chloroform
Chlorobenzene	Nitrobenzene
Chlorophenols	Phenols
Chloroprene	Vinylidene chloride
Cresols	Xylenes
Maleic anhydride	Glycol ethers

4.0 MITIGATION MEASURES

Mitigation measures are required to reduce potentially significant air quality impacts caused by a proposed project. The CEQA Guidelines also state that a project shall not be approved with significant environmental impacts if there are feasible mitigation measures to reduce or eliminate the impact.

This section lists mitigation measures for construction and operational impacts by pollutant. The following list of mitigation measures should not be considered all inclusive, and it should be noted that more than one mitigation measure per pollutant may be required to reduce project impacts below the significance threshold.

4.1 CONSTRUCTION MITIGATION

4.1.1 NO_x Mitigation Measures

Best Available Control Technology (BACT)

- Reduce engine size of construction equipment[1]
- Electrify equipment where feasible
- Maintain equipment in tune per manufacturer's specifications
- Install catalytic converters on gasoline-powered equipment
- Implement engine timing retard (four degree)
- Substitute gasoline-powered for diesel-powered equipment

Additional Mitigation

- Curtail (cease or reduce) construction during periods of high ambient pollutant concentrations
- Reduce construction period and number of pieces of equipment[2]
- Implement activity management (e.g., rescheduling activities to reduce short-term impacts)

The mitigation measures identified above for NO_x construction emissions are applicable for reducing potential NO_x "hot spot" emissions (and hence

---

1 Reducing engine size may decrease peak hour emissions but may lengthen the construction period and, thus, increase total construction emissions.

2 Reducing the length of the construction period may reduce total construction emissions but may increase peak emissions.

violations of the 1-hour NO_2 AAQS), as well as ozone precursor emissions. Additional ozone mitigation measures include emission offsets and other offsite mitigation.

4.1.2 PM_{10} Mitigation Measures

Fugitive Emission Mitigation

- Reduce amount of disturbed area
- Utilize water and/or other dust palliatives
- Revegetate/stabilize disturbed area as soon as possible

Equipment Exhaust Mitigation

- Reduce engine size of construction equipment
- Electrify equipment, if feasible
- Maintain equipment in tune per manufacturer's specification

Fugitive and Equipment Exhaust Mitigation

- Curtail construction during periods of high ambient pollutant concentrations
- Implement activity management (e.g., reschedule planned activities to reduce short-term impacts)
- Reduce construction period and number of pieces of equipment

4.2 OPERATIONAL MITIGATION

4.2.1 Ozone Precursors

The determination of an effective mitigation measure for operational impacts of ozone precursors depends on the nature of the emission source. If the emissions are from a direct source, the District should be contacted for direct (i.e., stationary source) mitigation measures. Transportation system management for indirect source mitigation is described below.

4.2.2 Indirect Source Mitigation: Transportation System Management

The following mitigation measures focus on the primary cause of pollution problems for many projects which are indirect sources of air pollution, i.e., on-road motor vehicle traffic. For these projects, emissions related to non-vehicular sources are usually relatively minor. Therefore, the focus of this section is primarily on land use and transportation planning and management measures to reduce motor vehicle pollution. The purpose of these transportation measures is to reduce vehicle miles traveled, vehicle trips and peak hour travel. These reductions will, therefore, reduce both regional and localized automobile-related air quality impacts of carbon monoxide (CO), reactive organic compounds (ROC) and oxides of nitrogen (NO_x). The latter two of these pollutants, in the presence of sunlight, react to form ozone (photochemical smog).

Employer or developer-based incentives to reduce vehicle trips typically promote a range of alternatives. These include public transit, bicycling, and walking, as well as carpooling and vanpooling, and parking management. To become effective, these programs need strong commitments on the part of the employer. Employers or developers may choose to incorporate new services at the work site in project development plans. To encourage greater employee ridesharing, an employer-directed ridesharing program could be based on mandatory, rather than voluntary, participation. The following options may be called for:

Carpool and Vanpool Matching and Promotion. This consists of assistance in matching up participants in carpools or vanpools, employer-based incentives, and other activities to encourage carpool and vanpool use. This may include:

- Written information to all employees regarding a carpool-vanpool matching service
- Preferential parking facilities for carpools and vanpools which may include providing guaranteed space to carpoolers or setting up a priority system for issuing parking permits; in large lots, assigning the closest, most convenient spaces to carpoolers; and if indoor spaces are available, giving carpoolers first priority
- Employee transportation coordinators to publicize and encourage carpooling-vanpooling, update matchlists, introduce prospective ridesharers, and generally assist employees in forming and maintaining ridesharing arrangements

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Equipment Exhaust Mitigation

- Reduce engine size of construction equipment
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- Maintain equipment in tune per manufacturer's specification

Fugitive and Equipment Exhaust Mitigation

- Curtail construction during periods of high ambient pollutant concentrations
- Implement activity management (e.g., reschedule planned activities to reduce short-term impacts)
- Reduce construction period and number of pieces of equipment

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- Employee transportation coordinators to publicize and encourage carpooling-vanpooling, update matchlists, introduce prospective ridesharers, and generally assist employees in forming and maintaining ridesharing arrangements

- Financial incentives paid by an employer to employees to encourage carpooling. Carpool subsidies may include direct cash payments to all persons, either riders or drivers, who carpool a certain number of days each month; provision of company vehicles for carpooling; company purchase and subsidizing of vanpools; or special fringe benefits, such as accrual of a "bonus" vacation day for every 100 workdays in a carpool.

Transit. Financial incentives paid by employers to employees to encourage use of public transit (including free bus passes or other subsidies) can reduce the number of vehicle trips.

Bicycling. Improvements to increase the use of bicycling as a mode of travel can include construction or improvement of bicycle storage facilities, education and promotion programs, and showers and lockers at the workplace.

Alternative Work Schedules. This is a concept which could be implemented by most employment sectors. This program complements ridesharing activities. Alternatives to the fixed 8-hour work day, 5-day work week have become increasingly popular and useful over the past ten years. In general, alternative work schedules can be characterized as falling into one of three categories:

- Staggered work schedules in which an individual or a group of workers are assigned fixed work start and end times differing from the common schedule

- Flexible work hours, or "flex-time," in which employees may choose their own schedule within certain limits determined by the employer

- Compressed work week in which employees work their normal number of hours in less than 5 days per week.

Development Design Criteria. Modifications such as inclusion of some of the onsite facilities listed below, redesign of parking facilities, inclusion of showers and bike lockers, or scaling a project down can be incorporated into a project to reduce work related or non-work related automobile use.

On-Site Facilities. These include facilities or equipment at the work site that reduce the need for off-site travel. Childcare facilities, cafeteria, postal machine, automated teller, and other services at the work site can reduce the number of trips and vehicle miles traveled (VMT) by the employee. Inclusion of markets, child care facilities, automatic teller machines and similar conveniences within residential developments can also reduce trips.

Telecommunications. Telecommunications in the form of teleconferencing and telecommuting can reduce work related travel. Teleconferencing includes the exchange of information by computer, telephone or video which reduces the need for transportation of people or material. Telecommuting involves working either full or part-time at home or at an alternative work center. An alternative work center can be either a satellite work center where a company establishes an auxiliary work site, or a neighborhood work center, where a number of companies share a common facility. In either case, the VMT can be reduced by locating the alternative work center closer to employee residences.

Parking Management. This involves reducing emissions through parking facility layout or through energy conservation. Limiting parking at employment centers to, for example, two spaces per three employees, can reduce trips by encouraging higher commute vehicle occupancy. Parking facility design may involve the layout of entrances and exits of parking facilities to avoid violation of air quality standards, especially for uses with concentrated traffic patterns.

Alternate Fueled Vehicles. The inclusion of alternate (clean) fueled delivery, fleet, or company vehicles can mitigate air quality impacts of commercial developments.

Off-Site Mitigation. Application of some of the above features to existing facilities can mitigate the regional impacts of the proposed project. Purchase of vanpools, shuttle buses, bicycle lockers, and alternate fueled vehicles are examples of mitigation which can be applied off site.

4.2.3 Energy Conservation

These measures may include:

- Additional conservation beyond that required by state or local regulation
- Inclusion of solar water and pool heaters
- Provision of energy efficient street lights
- Landscaping to shade buildings.

Response 10-1: Comments noted. The potential need for an Authority to Construct (ATC) Permit is currently being evaluated by Ionics and the City. It is considered unlikely that an ATC will be required for acutely hazardous material (AHM) controls under Article 80 of the UFC since Ionics no longer proposes to use sulfur dioxide (replaced with non-gaseous sodium metabisulfite which is not an AHM), and chlorine for the desalination facilities will be provided by existing El Estero WWTP facilities. No increase in chlorine storage is proposed and no significant changes to the existing chlorine system are required to supply the desalination project with chlorine via double wall piping in a dilute (0.3% concentration) aqueous solution. The City has determined that renovation of the existing chlorine facilities under Article 80 of the UFC will not be required.

Response 10-2: Comment noted. Construction emissions are typically not subject to permitting unless a Permit to Operate will be required (reference APCD Rule 202[c][3]). The proposed desalination project should not require a Permit to Operate since no stationary emission sources are proposed as part of the project.

As per the APCD's request, construction emissions were estimated. The following components of the construction effort were considered in the calculations:

- Construction equipment emissions (onshore and offshore);
- Truck delivery emissions; and
- Construction workforce commute emissions.

The preliminary emission estimates follow:

- Combined maximum emissions in peak month of construction --

- CO = 0.85 ton (month 6)	- THC = 0.43 ton (month 2)
- NO_x = 1.89 tons (month 6)	- SO_x = 0.24 ton (month 2)
- RHC = 0.04 ton (month 5)	- Particulates = 0.18 ton (month 3)

- Total emissions over the 13 month construction period for the 10,000 AFY plant --

- CO = 5.53 tons	- THC = 1.64 tons
- NO_x = 7.80 tons	- SO_x = 1.00 ton
- RHC = 0.28 ton	- Particulates = 0.72 ton

A comparison of these estimates to the values listed in the "Santa Barbara County Environmental Thresholds and Guidelines Manual" indicates that the NO_x threshold of 2.5 tons emitted over a three month period will likely be temporarily exceeded during the construction phase of the project. The onshore and offshore emission estimates were calculated utilizing emission factors in AP-42 for various onshore and offshore construction equipment as well as worker commute vehicles and truck deliveries. The estimates presented above include combined emissions from construction of the desalination plant, pump station/chemical facilities, and beach and offshore construction activities. Assumptions include 26 working days per month, 10 hour work days, varying use factors by piece of equipment and month, and a 0.5 load factor for onshore construction equipment. The emission estimates do not include reductions that will be obtained via implementation of mitigation measures and are considered to be worst-case estimates.

Exceedance of the emission threshold for NO_x based on the calculated emission estimates indicates that mitigation measures are appropriate. In order to mitigate impacts, the City will require that Ionics comply with the City's standard air quality related mitigation measures for projects of this type within the City. These measures include: fugitive dust control; proper maintenance of equipment and engines; use of gasoline powered motors versus diesel as practical; encouragement of car pooling by the construction workforce; and stipulations that truck deliveries be scheduled for non-peak hours. Refer to Section 2.5.3 (Construction Equipment Requirements) in the Final EIR for more information regarding measures which will be undertaken to mitigate air quality emissions associated with construction activities.

Response 10-3: As discussed in Section 3.11.2 of the EIR, Southern California Edison (SCE) has stated that there is sufficient capacity within their grid to supply the 8 MW of electrical power required by the proposed desalination project over the five year project life without adding any new generating sources. According to SCE, all of the electrical generating facilities which will serve this project have been previously approved and permitted,

including associated air quality permits, as applicable. Air emissions which could theoretically be attributed to generation of 8 MW of electrical power for the desalination project are included in Section 3.11.2 of the EIR.

SCE (Terrill, 1991) does not consider it likely that the Ellwood Power Station or any other local generating facility in Santa Barbara County would ever be used to generate electricity for specific use by the desalination project.

Response 10-4: Comment noted. Refer to Response 10-1.

Response 10-5: Comment noted. Any use of the facility as a supplemental, long-term water supply would require additional environmental review. Refer to Responses 7-6 and 13-6.

The City complies with the consistency provisions of the County APCD AQAP through adherence to the policies of City Charter section 1508 (Measure E), the General Plan, and zoning ordinances which control growth.

STANLEY H. MENDES, INC.
STRUCTURAL ENGINEER
3217 LUCINDA LANE
SANTA BARBARA, CALIFORNIA 93105

PHONE (805) 682-2599

January 22, 1991

RECEIVED

JAN 22 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

Mr. Mitch Oshinsky
Principal Planner
Planning Department
City of Santa Barbara
630 Garden Street
Santa Barbara, CA 93102

Subject: Draft EIR for Temporary Emergency Desalination Plant SB-106-90

Dear Mr. Oshinsky:

PURPOSE

The purpose of this letter is to assist the City of Santa Barbara with development of a complete and accurate Environmental Impact Report which is fully consistent with the laws of the State of California and the City of Santa Barbara governing the preparation of the document.

INTRODUCTION

11-1

It is essential to the health, safety, and welfare of the people of Santa Barbara that the proposed desalination facility is able to produce potable water immediately following damaging earthquakes that will be experienced in Santa Barbara. Loss of function for a brief period of time may be acceptable, but loss of function for an extended period should be avoided if at all possible!

A complete and accurate EIR is an essential step to make certain that the desalination facility survives and functions as intended following earthquakes.

The completeness and accuracy of the EIR as a whole

11-1 is questionable because of the following very obvious, serious errors and/or omissions.

SOME ITEMS NECESSARY FOR A COMPLETE AND ACCURATE EIR

1. STATE OF CALIFORNIA LAW MANDATES THAT A DULY LICENSED CIVIL ENGINEER PREPARE THE EIR.

The EIR addresses the siting and construction of a water supply facility and thus constitutes the practice of civil engineering as defined by the licensing laws of the State of California. Those laws require that the report be
11-2 prepared by a duly licensed Civil Engineer with demonstrated competence and experience in all aspects of the proposed citing and construction of the water supply facility.

The engineer must sign and seal the report as evidence of legal responsibility (and potential liability) for the accuracy and completeness of the report. No such signature was found!

2. RUPTURING OF BURIED WATER AND SEWER LINES

The EIR does not address, in any meaningful detail, the earthquake related damage to and rupturing of underground buried water and sewer lines. Especially vulnerable are water and sewer lines in poorly consolidated soils with a liquefaction potential such as underlies the proposed site
11-3 and hundred of acres of the surrounding area.

Surface ponding of sewage at the site is very possible. The health-safety implications of such an event are unthinkable in Santa Barbara.

I personally witnessed such ponding of sewage in the

11-3 Anchorage area immediately following the 1964 Alaska (Magnitude 9.6±) earthquake.

3. THIS "MOST CRITICAL FACILITY" SHOULD SURVIVE AND OPERATE IN THE EVENT OF A MAJOR EARTHQUAKE DISASTER.

The Seismic Safety Element (SSE) of the General Plan clearly states that this "---most critical facility---should not only remain standing, but should be able to operate at peak efficiency in the event of a disaster."

11-4 Site and off-site problems related to possible soil liquefaction, lateral spreading and/or lurching of the ground and buried sewer and water lines are immense. The EIR effectively "assumes" and concludes that "good engineering practice" and conformance to "---the <u>minimum</u> (emphasis added) requirements of the Uniform Building Code (UBC)" will mitigate potential impacts.

The EIR contains no meaningful detail as to how this will be accomplished.

Such a "big brother"---"trust me" attitude is unacceptable to the vast majority of knowledgeable, experienced engineers. Based upon my forty-three years of experience, I <u>KNOW</u> that serious errors and/or omissions are not unusual. They can be avoided if a sustained, special effort is made on the part of all parties involved in the proposed design and construction.

4. THE PROPOSED SITE IS "NOT ACCEPTABLE" ACCORDING TO THE SSE OF THE GENERAL PLAN.

The SSE of the General Plan clearly identifies the site of the proposed desalination facility as "not acceptable" because of

a) liquefaction -- (1) which failed the Sheffield Reservoir in the 1925 Santa Barbara Magnitude 6.3 earthquake, (2) which caused great damage in the Marina area of San Francisco during the 1989 Loma Prieta earthquake.

b) tsunami or seismic sea wave of at least "10 feet high" as set forth in the SSE.

11-5 c) severe ground shaking associated with soft soil deposits.

The site *may* be acceptable only if there is proper mitigation of the possible effects of liquefaction, tsunami, and severe ground shaking.

It is highly unlikely that mitigation can be achieved by conforming to the "--minimum requirements of UBC---" as presently proposed. Something more than "---minimum requirements---" will undoubtedly be necessary. I believe that the people of Santa Barbara deserve, and are willing to pay for, a water facility with greater survivability than would be produced by "minimum UBC requirements".

5. THE EIR DOES NOT ADDRESS SEISMOLOGY AND GROUND

11-6 MOTION RELATED TO THE SOFT SITE SOILS.

Of particular concern is the amplification of bedrock ground motions such as occurred throughout the Bay area during the 1989 Loma Prieta earthquake.

The May 1990 Report to Governor George Deukmejian from the Governor's Board of Inquiry states: (pgs. 114 & 115)

"The effects of soft sediments on ground motion are well demonstrated, including amplification of motions of from two to four times that on bedrock. The relation of ground motion periods is well illustrated in the records.
11-6 The motions during this earthquake at soft sites were clearly more than anticipated, even by the most up-to-date building codes." (emphasis added)

The report further states: (pg. 92) "Liquefaction was widespread close to the source in Santa Cruz, Watsonville, and Moss Landing and in many areas in San Francisco, Treasure Island, Emeryville, and Oakland" 50 to 60 miles away.

The EIR should address all of the possible implications of the above-referenced report to Governor George Deukmejian.

6. THE EIR SHOWS A BIAS REGARDING THE POTENTIAL FOR SITE LIQUEFACTION.

The EIR inappropriately uses a report of soil investigation for a 40-foot by 60-foot nearby site to downplay the
11-7 site liquefaction potential. (See page 3.2, last paragraph, copy enclosed.)

This speaks to the competence or lack of it of the author of the EIR! Enclosed is a copy of a transmittal

11-7 dated 11/16/90 of the above report (Stahl, Gardner & Dunne, 1987) to a local engineering firm engaged to design the facility. The transmittal states "Mr. Christopher, ---W/CH2M Hill wanted to inform all of the parties that the data presented in the above-referenced report are applicable only for the specific locations cited in the report. The data are not applicable at other locations."

11-8 7. THERE ARE NUMEROUS OTHER EXAMPLES OF THE INCOMPLETENESS AND INACCURACY OF THE EIR.

A) The discussion of "Alternate Sites" contains numerous conclusions unsubstantiated by a detailed discussion or meaningful facts. The City Council, as decision makers, have not been presented with information that quantifies possible impacts as required by CEQA.

B) Why wasn't the city-owned Old Lighthouse site at Shoreline Drive and Meigs Road considered?

C) There are many others!

CLOSING

11-9 As I stated to you and others present at the Environmental Review Committee Public Hearing of January 15, 1991, I am greatly hampered in making a complete response by not being permitted to review the <u>completed</u> geotechnical report of the site investigation referred to on page 3.7 of the EIR.

Very sincerely yours,

Stanley H Mendes

Stanley H. Mendes
Structural Engineer

SHM:pm

Enclosures 2

REGISTERED PROFESSIONAL ENGINEER
STANLEY H. MENDES
Exp 9/92
SE#709
Stanley H Mendes
STRUCTURAL
STATE OF CALIFORNIA

Response 11-1: Refer to Response 9-29. The City and Ionics share the commentor's concerns regarding the ability of the desalination facility to be able to withstand the effects associated with a possible seismic event during the project life. The project design includes consideration of the strict building code requirements for Seismic Zone IV, and the Geotechnical Study recommendations prepared for the project by certified engineers which are presented in Appendix F of the Final EIR. Compliance with the recommendations in the Geotechnical Study and the City's Building Permit review process will assure that the project is designed and built in accordance with applicable regulations and requirements.

Response 11-2: The California Environmental Quality Act does not require that a "duly licensed Civil Engineer prepare the EIR". The overall purpose of the EIR is not to site or design the project, but instead to assess the potential environmental effects associated with the project and alternatives and to recommend and/or stipulate mitigation measures as necessary to reduce impacts or risks to acceptable levels. Registered professional engineers will sign all engineering design studies/plans including the Geotechnical Study for the project as well as the design plans submitted for Building Permit review.

Response 11-3: Refer to Response 9-29, and Section 3.2 of the EIR and Appendix F of the Final EIR for a discussion of seismic related hazards, including ground shaking, liquefaction, and ground displacement. The potential for damage to project equipment and piping is recognized and discussed in Section 3.2.2.2 of the EIR. Mitigation of seismic related hazards, including the requirement for compliance with the recommendations of the Geotechnical Study in Appendix F, is addressed in Section 3.2.3.2 and the residual risk is considered to be acceptable.

The piping for the proposed desalination project facilities will be relatively flexible and resistant to breakage. All incoming seawater feed lines and the outgoing potable water lines (i.e., from desalination plant to tie-in with City water main on Yanonali Street which is north of El Estero WWTP) will be operated under pressure and will resist inflow of any type. Incoming seawater is disinfected as is the finished product water. Although not necessary or relevant to this project, the RO process is capable of removing constituents of concern in sewage. Following an earthquake, all facilities including pipelines would be checked and repaired as necessary prior to plant re-startup.

Response 11-4: Comments noted. The proposed project will conform with all applicable regulations and requirements. The consideration of seismic hazards in the design including compliance with the recommendations in the Geotechnical Study will reduce risks to acceptable levels. It is acknowledged that a major earthquake could temporarily damage the desalination plant

and other project components and temporarily take the facility "off-line." The facility would be repaired and put back on line as quickly as possible. A major seismic event would be expected to affect structures all over the South Coast area, not just the desalination plant.

Response 11-5: Comment noted. As discussed in Section 3.2.3.2 of the DEIR, the proposed project will be designed to meet design standards specified by the City Building Department, the Uniform Building Code (Seismic Zone IV), and the recommendations in the Geotechnical Study presented in Appendix F of the Final EIR. The proposed design and seismic hazard mitigation goes beyond minimum requirements of the UBC and are considered adequate to reduce risks to acceptable levels.

Response 11-6: Refer to Response 9-29. The EIR acknowledged and addresses ground motion as a potential geologic hazard in the project vicinity. This hazard is known and addressed in the design of project facilities, and is further addressed in the design recommendations in the Geotechnical Study in Appendix F. Refer to Response 11-5.

Response 11-7: Section 3.2.1 of the DEIR identifies that the study prepared by Hoover in 1978 classified the area as having high liquefaction potential. The 1987 Staal, Gardner, and Dunne report did not identify a high liquefaction potential for the Wastewater Reclamation Plant, which is adjacent to the El Estero WWTP and the proposed Pump Station/Chemical Treatment Area. The statement which is presented on page 3-2 of the DEIR is correct as stated. The statement regarding "... indicated a low potential for liquefaction..." relates to the Staal, Gardner, and Dunne study for the Wastewater Reclamation Facility, not the El Estero WWTP. Liquefaction potential is a function of hazard (based on soil type, particle size, depth to groundwater, seismic zone, etc.) and the type of facility including point loads, etc. The Wastewater Reclamation Facility conditions are potentially relevant regardless of the standard disclaimer provided by CH_2M-Hill. Regardless, the hazard is recognized and the results of the site specific geotechnical investigation for the project are reflected in the design recommendations in the Geotechnical Study. The seismic/geologic hazards mitigation recommendations will be implemented in accordance with Ionics' commitment.

Response 11-8: Comments noted. The assessment of alternate sites included in Section 7.0 of the EIR does not identify any sites which appear capable of meeting the selection criteria established by the City. The old lighthouse property on the bluffs near Shoreline Drive and Meigs Road was not included but is considered to be very similar to the Shoreline Drive site which was assessed and has similar constraints.

Response 11-9: The Geotechnical Study is presented in Appendix F of the Final EIR and a copy was made available to the commentor as soon as it was available.

County of Santa Barbara

RESOURCE MANAGEMENT DEPARTMENT

John Patton, Director

January 22, 1991

RECEIVED

JAN 22 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

Mr. Mitch Oshinsky, Principal Planner
City of Santa Barbara
Community Development Department
630 Garden Street
Santa Barbara, CA 93102-1990

RE: Comments on Draft EIR; Ionics Inc. Desalination Facility

Dear Mr. Oshinsky:

Thank you for the opportunity to comment on the Draft EIR for the City of Santa Barbara's proposed emergency desalination facility. We appreciate your willingness to perform a full environmental review despite the urgency of the drought situation. Our comments on this project are listed below in two sections. The first section includes our concerns with the DEIR for the current proposal. The second section covers issues which would need to be fully discussed in a future environmental document should this temporary facility be proposed to become permanent. We hope these notes will help you finalize the current document and will assist in any additional environmental review of this facility.

EMERGENCY DESALINATION FACILITY

12-1

1. We recognize that SCE has indicated that they can supply 8MW of electricity to power the proposed facility. The addition of this significant new load will presumably cause additional electrical generation to occur, some of which will be generated through combustion. As indicated on page 3-101, substantial SOx, NOx and CO_2 emissions will result from this project. These emission figures should be shown in lbs/peak hour in addition to tons/year. APCD should be contacted to determine significance of this impact. In any event the substantial air emissions should be discussed in the Summary Table.

12-2

2. Page S-8: The salinity measurements and increased sampling frequency must be included in the offshore monitoring program, not just considered for inclusion. This monitoring program should be tied to potential action that the City might take if unanticipated adverse impacts are found.

12-3

3. Page 3-72: Health effects from new 66 KV substation and new electric line along Yanonali St. could be potentially significant (exposure to electromagnetic field) and should be evaluated in this section.

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4. Page 2-46: According to a recent report by the Metropolitan Water District, the EPA is expected to lower the standard for trihalomethanes (THM's) to 20-50 ppb; some experts believe the
12-4 standard could be as low as 5 ppb. The project description should discuss whether the system being installed can be modified to meet these possible future standards. In addition, the possible health effects of THM's should be briefly discussed in Section 3.7.

5. Page 2-4: The level of depletion and the average annual recharge (i.e. safe yield) of the City's groundwater basins
12-5 should be noted (Reference the USGS reports). This would give an approximate time frame for the "replenishment/recovery" of the basins.

6. Page 2-1: Reliance on groundwater during droughts is a normal part of a conjunctive use operation with surface supplies. Overdraft is defined as long term average annual pumpage (through wet periods and droughts) which exceeds safe yield (long-term average annual net recharge). This pumpage is in
12-6 response to long term demand not met by other sources of supply. If the water made available by this facility represents a truly temporary supply, not a supplemental supply, the long term overdraft of the City's basins will not be affected.

7. Page 3-11: Mitigation measures 3.2-3 relies upon a future study (geotechnical report) to identify measures to address potential seismic impacts. The Sundstrom vs. Mendocino case established that future studies are not mitigation. Recommendations made
12-7 in the report could substantially alter the project. The geotechnical report should be completed with recommendations included in another draft EIR or the level of impact should be changed to Class I.

8. Page 3-13: In order to complete the "Environmental Setting" section, the quality of the groundwater beneath the site should
12-8 be stated in the second paragraph, based on the best available data. The distance to the nearest municipal supply well(s) should be shown on the map included in this section.

9. Page 3-13: In the "Environment Impact" section, some
12-9 discussion of the potential for contamination of groundwater supplies should be provided.

10. Page 3-34: (3rd Paragraph) A brief discussion of the relative toxicity of the metals in the combined discharge, especially
12-10 those with concentrations greater than seawater, would be helpful to explain Table 3.3-1.

11. Page 3-37: The vegetation in Laguna Channel should be described. Are native riparian or other wetland species
12-11 present? The level of potential impact depends on the biologic value of a site prior to construction.

12. Page 3-38: The area where kelp beds occurred in the past
should be treated as biologically sensitive, since this
12-12 resource could become reestablished given proper climatic
conditions. Any potential impacts to reestablished kelp beds
should be noted.

13. Page 3-44: The statement that mortality of plankton, fish, and
eggs is not expected to result in a significant depletion of
marine organisms is not supported by the document. In
particular, the cumulative effects of other projects impacting
12-13 seawater (other desal facilities, saltwater, intakes for
mariculture, water polluction, etc.) could be significant.
Evidence from an operating desalination plant which indicates
no substantial depletion in marine organisms would support this
conclusion.

14. Page 3-64: In the spirit of AB 3180, an acoustical study of
the Rescue Mission should be conducted. If the planned-for 25
12-14 dB reduction cannot be verified, additional mitigation should
be formulated to avoid significant noise impacts to the
residents of that facility.

15. Page 3-79: Since consultation with a physician is cast as a
mitigation measure, will water customers be notified that
12-15 individuals with heart and/or kidney ailments should consult
with their doctor about increased levels of sodium, chloride
and potassium?

12-16 16. Page 4-4: See comment re p. 3-44.

PERMANENT DESALINATION FACILITY

17. Whether operated continuously or intermittantly as droughts
occur over time, a permanent desalination facility would
represent a substantial, and supplemental, long-term source of
water. Such a facility would have significant growth-inducing
potential. If used intermittantly, the City would be able to
draft Gibralter Reservoir at a higher annual rate because
12-17 drought shortages would be offset with desalination water.
Continuous use would be a direct increase in water supply.
Growth potentially resulting from this new supply, and
associated impacts, would need to be comprehensively discussed
in the environmental document for a proposed permanent
desalination plant.

18. The relationship between the new water supply and the
overdraft of the City's groundwater basins should be thoroughly
12-18 discussed. If alleviation of basin overdraft is cited as a
benefit of the project, specific enforceable measures to reduce
pumpage on the basins, for the long term, should be identified.

19. The probable long-term cost of water should be analyzed for
various mixes of new and existing customers. The purpose of
12-19 this analysis is to allow the public to understand the fiscal
pressure to expand the customer base (i.e. growth) to pay for

12-19 expensive new supplies and to point out the likely level of individual water bills.

12-20 20. The analysis of health hazards from electromagnetic radiation should be based on permanent use.

12-21 21. The health effects of a long-term change in the quality of the City's water should be analyzed.

12-22 22. The possible continuing accumulation of lead and mercury in the marine food chain should be discussed. Impact on the biota and on their use as a food source should be evaluated.

12-23 23. Long-term maintenance of the facility should be detailed in order to show how corrosion-caused breakdowns and associated impacts will be minimized. The impact of plant shutdowns on project yield should be analyzed.

12-24 24. Refer to Comment #7 above. All geotechnical studies of the site and pipleline corridors should be completed with recommendations incorporated into the environmental document.

12-25 25. The effect on groundwater quality of landscaping return flows from the desalination water which has a higher salt content than current supplies. The long-term buildup of salts in the soil and its effects on vegetation should also be assessed.

If you have any questions regarding these comments, please contact Alice McCurdy or Brian Baca of the Division of Environmental Review and Compliance at 568-2020.

Sincerely,

Jeffrey T. Harris

Jeffrey T. Harris, Deputy Director

corresp\desal.bb

Response 12-1: Comments noted. Refer to Response 10-3. According to SCE (Terrill, 1991), data for air emissions on a "pounds per peak hour" basis are not available. However, SCE has stated that the emissions (per megawatt hour [MWh]) during the peak hour of the day would not exceed the following for oil and gas based electrical generation in the Los Angeles Basin:

SO_x	NO_x	CO_2
0 lb/MWh	0.25 lb/MWh	1200 lb/MWh

These emission rates are within the allowable range according to SCE (Terrill, 1991). Other electrical generation areas which supply electricity to the SCE grid where emissions occur include the "North Coast" (oil and gas) and the "Pacific Southwest" areas.

As stated in Response 10-3, SCE (Terrill, 1991) does not consider it likely that any local electrical generating facilities will ever be used to generate electricity for the desalination project, therefore the significance of the previously approved and permitted emissions which could theoretically be attributed to generation of 8 MW for this project is not likely to be under the purview of the Santa Barbara County APCD.

Response 12-2: Comments noted. The offshore monitoring program will be developed and performed in conjunction with the National Pollutant Discharge Elimination System (NPDES) permit to be modified and/or re-issued by the Regional Water Quality Control Board. Refer to Response 17-19 for more information regarding the offshore monitoring program to be performed as part of the mitigation for the proposed project.

Response 12-3: SCE estimates via computer simulation that the electromagnetic field (EMF) generated by the proposed 66 kV electric transmission line along Yanonali Street would be 1.12 milligaus (Terrill, 1991). The Draft EIR for Phase I of SCE's Proposed Electric Transmission Line Between Goleta and Gaviota (Santa Barbara County, Resource Management Department; June, 1990) indicates that the normal magnetic field predicted for the area directly beneath the proposed Goleta-Gaviota 66 kV line is about 5 milligaus. The discrepancy between SCE's EMF estimate of 1.12 milligaus for the desalination project related 66 kV transmission line and the estimate of 5 milligaus in the EIR for the Goleta-Gaviota 66 kV line is likely due to differences in the way the lines would be operated. For comparison purposes, the County study lists magnetic fields as 30 - 225 milligaus for an electric can opener, 3 - 50 milligaus for an electric blanket, and 50 - 300 milligaus for an electric shaver. Magnetic fields of less than 10 milligaus are typically considered "low magnetic fields." Due to the approximate 50 foot distance between the perimeter fence and

the proposed 66 kV substation, SCE anticipates little or no effect of EMF originating from the substation (Terrill, 1991). Electromagnetic field strengths decrease rapidly with increasing distance from the source.

The potential health effects of EMF are not well known or documented, and the available data are in many cases contradictory and/or controversial. The available literature indicates the highest potential health effect (cancer) concerns regarding EMF relate to exposure of children and electrical workers. Credible dose-risk relationships have not been established, thus a meaningful assessment is not possible at this time. In general, EMF concerns are normally associated with high voltage transmission lines; 66 kV transmission facilities are at the low end of the range of "high voltage transmission facilities" (Florida Electric and Magnetic Fields Science Advisory Commission, 1985). No data have been identified that demonstrate potentially adverse effects would occur associated with the proposed 66 kV electrical facilities.

Response 12-4: Refer to Responses 7-3 and 9-7 regarding the ability of the proposed project to meet current and future THM standards. The THM levels that will be produced by this project will meet all standards and therefore will not result in significant health hazards.

Response 12-5: The City currently estimates that the safe annual yield of the City's groundwater basins is 1400 AF which is equal to the average annual recharge (Mack, 1991). Given the current drought conditions and the City's reliance on the groundwater basins to help make up the difference for surface water supplies which are unavailable due to the drought, the City estimates that the deficit in the groundwater basins will be about 10,000 to 15,000 AF by the time the desalination plant is scheduled to be on line in early 1992. If heavy rainfall is received, the basins could be replenished in 2 to 3 years, but this is considered unlikely. Assuming average rainfall, the City estimates it will take between 7 to 11 years to make up the deficit even if groundwater pumping was discontinued completely during the recharge time frame (Mack, 1991).

Response 12-6: Comment noted.

Response 12-7: In cases where significant adverse impacts have not been identified, it is acceptable standard practice to develop specific mitigation measures prior to issuance of building permits. In this case the City has gone over and above standard practice in that the Geotechnical Study has been finalized and is presented in Appendix F of the Final EIR. The findings and recommendations in the Geotechnical Study do not substantially alter the project and there are no changes to the impact findings for geology or other topics related to the recommendations in the Geotechnical Study.

Response 12-8: Comment noted. As stated in Section 3.3.1.1 of the EIR, the depth to groundwater at the desalination plant site is about 7.5 feet and about 8.0 feet at the pump station/chemical treatment area. Neither the City or Ionics has sampled the near surface groundwater at these locations; this shallow groundwater is not used for drinking or other beneficial use. The City groundwater wells extract water from wells at depths of 200 to 700 feet below ground surface. The nearest production wells to the desalination facility site are about 2500 feet away (Ortega/Salsipuedes, Cota/Olive, and Cota/Santa Barbara Street) (Burnworth, 1991).

Response 12-9: As discussed in Section 3.3.1.2 on page 3-14 of the EIR, the potential for shallow groundwater contamination exists associated with an accidental pipeline rupture or an accidental chemical storage tank leak, including during refilling operations. The use of double walled piping, secondary containment of chemical storage areas, constant monitoring via the desalination plant control room, and adherence to applicable regulations and requirements will reduce the likelihood of an accident and subsequent groundwater contamination possibly occurring.

Response 12-10: Comment noted. A comparison of the combined El Estero WWTP and desalination plant brine effluent with recommended levels and EPA goals is presented below.

Inorganic Constituent	Projected Combined Effluent Concentration (10,000 AFY)	Recommended Designated Level Examples in a Liquid to Protect Marine Waters	Water Quality Goals - Marine EPA Acute Toxicity
Arsenic	0.006 ppm	0.8 ppm	2.3 ppm
Cadmium	0.045 ppm	0.3 ppm	No Std.
Chromium	0.066 ppm	0.2 ppm	10.3 ppm
Copper	0.070 ppm	2.9 ppm	No Std.
Cyanide	Not Available	0.1 ppm	No Std.
Lead	0.009 ppm	0.56 ppm	No Std.
Mercury	0.001 ppm	0.002 ppm	No Std.
Nickel	0.032 ppm	0.83 ppm	No Std.
Silver	0.055 ppm	0.045 ppm	No Std.
Zinc	0.167 ppm	20.0 ppm	No Std.
Selenium	0.006 ppm	5.4 ppm	No Std.
Thallium	Not Available	No Std.	2.1 ppm
Antimony	Not Available	No Std.	No Std.
Beryllium	Not Available	No Std.	No Std.

Source: "Water Quality Goals, Hazardous Criteria, and Designated Level Examples for Chemical Constituents (California Regional Water Quality Control Board - Central Valley Region, September, 1987)."

As can be seen by the tabular comparison presented above, none of the EPA Acute Toxicity values (to protect saltwater aquatic life) are exceeded by the constituent concentrations in the combined discharge. The combined effluent discharge concentration for silver is estimated at 0.055 mg/l using the annual maximum value reported for the El Estero WWTP for 1988 -- i.e., this is a worst case estimate since it uses the maximum El Estero value for the entire year. The value for silver is the only one that exceeds the "recommended levels in a liquid to protect marine waters" and the addition of brine discharge actually reduces the value from 0.06 mg/l for El Estero (annual maximum) to 0.055. For comparison purposes, the existing RWQCB limitations for the El Estero discharge for silver is 0.0655, thus the combined discharge meets the existing discharge limitation.

Response 12-11: The general description in the EIR of vegetation which is present in Laguna Channel is adequate considering that no construction activities are proposed to occur in, over, or directly adjacent to Laguna Channel.

Response 12-12: The proposed desalination project does not involve any construction activities in or near any current or known historic kelp bed areas. Historic kelp beds were present inshore and more than 0.25 miles to the east of the proposed intake location. Two historic kelp beds were located more than one mile north and one mile west, respectively, of the existing El Estero ocean outfall/diffuser (City of Santa Barbara Local Coastal Plan, 1981).

These kelp forests disappeared in 1983 when an El Nino event occurred. The seawater intake construction activities and operational characteristics are such that no impacts to potential kelp regeneration are expected. The significant distance from the existing El Estero outfall/diffuser to the historic kelp bed areas is expected to preclude effects on any kelp regeneration in these areas. The brine discharge associated with the proposed desalination facility will raise the salinity of the existing El Estero discharge to more closely approximate the normal salinity of seawater. The relatively deep water where the outfall/diffuser is located (about 75 to 80 below msl) versus the more shallow water where the historic kelp beds were as well as the higher density of the brine and the mixing efficiency of the diffuser will all tend to limit inshore effects associated with the combined brine/El Estero discharge. No significant effects to kelp regeneration potential are expected to be associated with the proposed project. The proposed offshore mitigation monitoring will help assure no adverse effects to marine biology and/or water quality occur. Refer to Responses 17-18 and 17-19 for more information.

Response 12-13: As stated on page 3-44 of the EIR, the impact finding of non-significance is based on the very low intake velocity of 3 cm/second or less which is less than the natural currents in the intake area which are reported to range from 0 to 40 cm/second. The very

low intake velocity relative to natural currents in the area will result in a very small area around the intake structure being subject to its influence including potential impingement and entrainment of marine organisms. No significant effects are expected to result from operation of the low velocity intake. Officials at the Chevron Gaviota Desalination facility have informed the City that their intake velocity exceeds that of the proposed Ionics intake design and that there have been no significant adverse effects related to their intake. Examples from other desalination plants are not directly relevant due to differences in intake design, flow rates, location, etc.

Response 12-14: Refer to Section 9.2.2 of the EIR which discusses mitigation monitoring for potential noise impacts at the Rescue Mission. As stated in Section 9.2.2, noise monitoring including interior noise levels within the Rescue Mission will be required by the City as a condition of approval for the project. If required interior noise levels are not met, additional remedial noise mitigation will be required by the City.

Response 12-15: As stated in Section 3.7.3.2 of the EIR, the finished water quality from the desalination facility will be of high quality and will meet all currently identified water quality standards, therefore, no mitigation measures are deemed necessary to protect human health related to potable water quality. The City mails out an annual report to all water customers regarding water quality within the City which will include consideration of the water quality produced by the desalination plant.

Response 12-16: Refer to Response 12-13 and 17-19.

Response 12-17 thru 12-25: Comments noted. Environmental impacts of any long-term water supply facility will be analyzed in the course of the review and permitting for such a facility. Refer to Response 7-6 for more information.

Cohen, England & Whitfield

ATTORNEYS AT LAW

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January 22, 1991

RECEIVED

JAN 22 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

City of Santa Barbara
630 Garden Street
Santa Barbara, California 93102

Attention: Mitch Oshinsky, Principal Planner

Re: Draft Environmental Impact Report for City of Santa Barbara and Ionics, Inc. Desalination Project, State Clearing House No. 9010859

Gentlemen:

Our firm represents the Santa Barbara Environmental Protection Alliance, a group of governmental entities and citizens from throughout the City and County of Santa Barbara adversely affected by the inadequacies of the above-described EIR, including the Santa Ynez River Water Conservation District, Improvement District No. 1, the City of Solvang, the Buellton Community Services District, Robert W. Dorn, Sr., Rebecca Hackett, Richard A. Hulme and W. Wright Watling. This letter is submitted on behalf of our clients to advise you of their objection to and comments upon the Draft Environmental Impact Report for the City's proposed desalination project.

PROJECT DESCRIPTION:

13-1 The City has misrepresented the scope of this project. Throughout, the Draft EIR refers to the desalination project as a temporary emergency project. (See, e.g. Draft EIR pp. 1-1, 2-1, 2-2, 3-101, 3-107, 4-3, 5-1, 6-1, 7-1) Almost immediately following the City Council's selection of this supposed temporary desalination project in August, 1990, however, City Council members began to suggest that any desalination

facility should be a permanent part of the City's water supply. This has since been formally adopted as City policy. In December, 1990 the City Council voted to pursue a 20 year program which would include a permanent desalination facility to extract 5,000 AFY from the sea. (Santa Barbara News Press, 12/19/90, p. A-1) It should also be observed two (2) members of the City Council who voted in the majority to pursue this 20 year program are listed as endorsing the initiative to require development of a permanent water desalination facility. (See Exhibit A)

13-1 A further indication of the long term nature of this project is the admission in the Draft EIR of the need to have water supplies available to replace groundwater production. (Draft EIR, p. 2-1) Unless the City can assure, if the drought ends, the recharge of the groundwater basin within five (5) years or less, then continued use of this desalination project will result. As a practical matter, once the facility development commences, whether its planned obsolescence is 5 years or 10 years or 20 years, the facility will not likely be abandoned even if an end to the drought should occur after its first years of operation. It will be capable of producing water and will likely be used for many years in an effort to generate a return on investment. To put it simply, the City and this Draft EIR have intentionally failed to acknowledge or admit that this project is really for the construction of a long-term, permanent facility, or, looked at most charitably, that the facility could potentially become permanent. The proof of this is evidenced by the fact that the City has required the facility to be built with materials having a useful life of twenty years, not five.

<u>CUMULATIVE IMPACTS</u>.

13-2a Under the California Environmental quality Act (Public Resources Code section 21050, et seq) a project for purposes of environmental review is considered the "whole of an action" (14 Cal. Code Reg. section 153768 (a)).

The EIR must include analysis of the environmental effects of future action if such future action is a "reasonably foreseeable" consequence of the initial project. (<u>Laural Heights Imp. Ass'n. v. University of Cal.</u> [1986] 47 Cal.3d 376, 253 Cal.Rptr. 426, 423).

The CEQA Guidelines define cumulative impacts as follows:

> "Cumulative impacts from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects." (Guidelines section 25355(b)).

The fact that a project's specific impacts are uncertain does not relieve the lead agency from including such projects in its analysis (See City of Antioch v. City Council of the City of Pittsburgh [1st District 1986] 187 Cal.App.3d 1325).

To be adequate an analysis of cumulative impacts must include:

(1) "a list of past, present, and reasonably anticipated future projects, including those outside the agency's control, that have produced, or are likely to produce, related or cumulative impacts (or reference to a
13-2a statement of analysis in some other planning document);

(2) a summary of such individual project's expected environmental effects; and

(3) a reasonable analysis of all of the relevant project's cumulative impacts . . ." (Guidelines section 15120(b)).

In this case the City has failed to mention <u>any</u> **potential effects** related to the permanent or long term use of the **project** facilities, despite the fact that such use is not only reasonably foreseeable, it is more likely than not to occur.

Recent cases have stressed the importance of cumulative impacts analysis: Laupheimer v. State of California (1988) 200 Cal.App.3d 440, 460-463, 246 Cal.Rptr. 82; Citizens to Preserve the Ojai v. County of Ventura (1985) 176 Cal.App.3d 421, 222 Cal. Rptr. 247; San Franciscans for Reasonable Growth v. City and County of San Francisco (1984)

151 Cal.App.3d 61, 72-74, 198 Cal.Rptr. 634. The Supreme Court recently made it clear that the EIR must consider impacts on a regional basis.

> "This is not to say that EIR analysis must proceed with regional blinders. The local agency need not, indeed it <u>may</u> not, ignore regional needs and cumulative impacts.
> . . .
>
> Again we emphasize that an EIR may not ignore the regional impacts of a project proposal, including those impacts that occur outside its borders; on the contrary, a regional prospective is required." (<u>Citizens of Goleta Valley v. Board of Supervisors</u> [1970] ___ Cal. 3d ___, ___ Cal.Rptr. ____ [Daily Journal Report 1/3/91, 129 at 133-134])

13-2a What CEQA forbids is a division of large projects into "bite-sized" chunks which defeats the policy of confronting the environmental implications of projects at the earliest possible stage. Potential environmental consequences of any proposed action must be assessed as early in the planning process as possible. (<u>Bozung v. Local Agency Formation Commission</u> [1975] 13 Cal.3d 263, 282, 118 Cal.Rptr. 249; <u>City of Carmel-by-the-Sea v. Board of Supervisors</u> [1986] 183 Cal.App.3d 1229, 241-243, 227 Cal.Rptr. 899.)

Given the undisputable fact that desalination has already been selected by the City Council as the preferred long-term, 20 year, solution to the City's water problem, there can be no doubt it is "reasonably foreseeable" that this project will ultimately become a permanent facility. Both the Council and its staff have acknowledged publicly on several occasions that a "permanent" desalination facility environmental review would take many months longer than a "temporary" facility review. It is obvious to even the most casual observer that the "temporary" designation has been methodically and deliberately used to describe the facility despite the reality that it is now, and probably always has been intended to become a permanent facility. The purpose of the subterfuge is solely to avoid the requirements of CEQA. Consequently, the EIR is patently defective on its face in its failure to consider in any meaningful way the many consequences of a permanent facility.

13-2b The Draft EIR claims that any extension of the project will result in "additional environmental review". (Draft EIR, p. 1-1, 2-47, 2-48) This reference to "additional environmental review" is nothing more than a euphemism for the possible use of a Negative Declaration for an extension of this project based on this original EIR. The assurances of future "additional environmental review" reads like a representation of "high nutrition", "low salt", or "low sugar" claims on a cereal box. The Draft EIR states at the end of the 5 year project life, the plant can be removed, the project extended or the plant left idle. (Draft EIR, p. 2-2) Each of these alternatives should be reviewed. In the absence of knowing which alternative will occur, at the very least, the worst case scenario should be studied now. An EIR which claims the proponent will study these unavoidable alternatives and their environmental effects later is on its face fundamentally defective.

<u>ALTERNATIVES - TANKERING</u>

13-3 The fact the City and its Draft EIR have lacked the candor or made the effort to address the consequences of this project as a permanent facility suggests a deliberate attempt to avoid having to give meaningful consideration to alternative sources of water. For example, one alternative source of water is importation by ocean tanker. By claiming the desalination project is a temporary five year project, and requiring applicants to amortize the cost of improvements necessary to carry out such a project over the five year period, the cost of tankered water ranged from $2285.00 per acre foot to $4078.00 per acre foot, for 10,000 acre feet per year. (Draft EIR Appendix D) The cost of tankered water was reduced substantially by treating it as a 10 year source of water with the cost ranging from $2030.00 per acre foot to $2796.00 per acre foot at 10,000 acre feet per year. (<u>Id</u>.) The cost of tankered water is said to be less than $1000.00 per acre foot based on a 20 year project. The cost of tankered water on a long-term basis appears to be competitive

13-3 with the alleged projected cost of desalinated water.[1] Consequently the claim of a higher cost for tankered water resulted directly from the failure to consider this alternative water source on a long-term basis and created an extremely misleading impression.

The Draft EIR is deficient in its evaluation of the tankering alternative in a number of other respects. Although it is correct there will be increased air emission from combustion of fossil fuel by tankers traveling the Santa Barbara Channel, the Draft EIR provides no quantification of these emissions and gives no consideration to the disbursal of such emissions due to normal wind conditions within the Channel. Most importantly, there is no determination whether this would be a significant adverse environmental impact. Also there is no comparison between air emissions due to tankering and air emissions due to energy usage by the proposed
13-4 desalination project, a fixed industrial pollution source.

The Draft EIR also mentions there will be impact by a tankering project to sensitive onshore habitats but contains no analysis nor any evaluation of the extent of that impact. Again, the Draft EIR does not indicate whether this will be a significant impact or not.

The only other comment regarding the tankered water alternative found in the Draft EIR is the fact that the permitting process would be more complex than a desalination plant. That argument, which is not well developed, cannot be a significant issue since the August 3, 1990 City Council

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[1]. It is claimed desalinated water will cost between \$1866.00 to \$2200.00 per acre foot. This is predicated upon the membranes which are at the heart of the reverse osmosis process, lasting on the average 5 years. This assumption is highly suspect since we are aware of no current reverse osmosis project in California which has not had membrane problems beyond one year on the average. We are told that Chevron advised South Coast water purveyors the cost per acre foot for its reverse osmosis facility in Gaviota was in the range of \$14,000.00 per acre foot. Consequently, the cost claimed for reverse osmosis is in all probability grossly understated.

Agenda Report determined that all three firms proposing to tanker water could implement their proposals within the required time frame. In other words, the Draft EIR appears to be designed not from the perspective of a neutral environmental analysis, but rather from the direction that a desalination project is to be justified by the Draft EIR. It is clear that the "project" was designed to eliminate alterna-
13-4 tives if at all possible.

The Draft EIR contains less than 1/2 page discussion on alleged environmental impacts of the tankering alternative. It contains no data, offers no analysis, and reaches no conclusion regarding the significance of these alleged impacts. To put it simply, the Draft EIR truly fails to evaluate this alternative in any substantive way.

ALTERNATIVES - STATE WATER PROJECT.

Another alternative source of water the Draft EIR fails to give consideration to is the State Water Project, which proposes to bring water south from San Luis Obispo to the southern portion of Santa Barbara County. By ignoring alternatives that include permanent solutions as well as "temporary ones", the Draft EIR avoids the cost comparison between the production of desalinated water at $1866.00 to $2200.00 per acre foot to the State Water Project supplied water at $1016.00 per acre foot.[2]

The failure of the City of Santa Barbara and other southern Santa Barbara County water purveyors to participate
13-5 in the State Water Project carries with it a hidden reduction

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[2]. By considering only an alleged temporary desalination project, the Draft EIR also ignores the regional impact of south Santa Barbara County not participating in the State Water Project. If southern Santa Barbara County does not participate in the State Water Project, the cost of state water to the Santa Ynez Valley increases from $866.00 per acre foot to $2009.00 per acre foot, state water to the Lompoc area increases from $605.00 per acre foot to $698.00 per acre foot, and state water to Santa Maria increases from $460.00 per acre foot to $510.00 per acre foot. (Exh. B)

13-5 in the future water supply of the City. If southern Santa Barbara County purveyors do not participate in the State Water Project, the cost of state water delivered to the Santa Ynez Valley escalates to over $2,000.00 per acre foot. (Exh. B) Because of the substantial cost increase to the Santa Ynez Valley if the City does not join the effort, the Santa Ynez Valley may be unable to participate in the State Water Project as well. To replace this lost capacity, the Santa Ynez River Water Conservation District, Improvement District No. 1, the City of Solvang and the Buellton Community Services District would have no alternative but to exercise their priority to Santa Ynez River water, thereby further reducing the water available to southern Santa Barbara County purveyors, including the City of Santa Barbara, from Lake Cachuma. The Draft EIR totally fails to consider this resultant reduction in the future water supply of the City and other South Coast water users should the City convince other southern Santa Barbara County purveyors to opt not to participate in the State Water Project.

GROWTH INDUCEMENT.

13-6 By asserting that the desalination project is a temporary project, the City and its Draft EIR have conveniently ignored the growth inducement which the project will have. Even droughts of biblical proportions (i.e. 7 years) end and plentiful rainfall will return along with water to resupply Lake Cachuma. Once a so-called "adequate water supply" is available from other sources, a permanent desalination facility increases the City's water capacity in excess of 60% over that now needed (approximately 16,000 AFY), permitting growth. A permanent desalination facility with 10,000 AFY capacity could provide more than three times the additional capacity of the proposed State Water Project allocated to the City. The Draft EIR does not evaluate the effect such additional capacity would have on the City and on southern Santa Barbara County.

VISUAL.

13-7 By assuming the desalination project is a temporary facility, the City and the Draft EIR have glossed over the cumulative impacts which a permanent project creates. For example, the Draft EIR explains away the visual impacts of the supposed temporary project by suggesting the City could choose

13-7 to override this concern because of the temporary nature of the project. (Draft EIR p. 3-107) However, when discussing the impact a possible extension of the desalination project would have, the Draft EIR claims no adverse visual effects (Draft EIR p. 4-5) forgetting that the visual unsightliness of a permanent project cannot be excused on the basis of a temporary inconvenience. The Draft EIR appears to be exceptionally biased on this point and clearly inadequate.

13-8 Even on a temporary basis the adverse visual impacts of the proposed project are significant and unmitigated. The Draft EIR admits this project is visible from the Rescue Mission on the east, Highway 101 on the north, and surrounding streets. (Draft EIR, p. 3-84) The proposed perimeter wall with oleanders on Yanonali Street and the chain link fence on the freeway side of the project and around the electrical substation assure that this project will be an eyesore from the start. The second story of the Rescue Mission will have an unobstructed view of the project. (Draft EIR, p. 3-88) The view from one of California's major (85,000 cars a day), scenic thoroughfares, Highway 101, toward the ocean, in the middle of a world-famous "beautiful" City will be interrupted and adversely affected by an ugly industrial facility immediately adjacent to the freeway. If ever there were a case for a significant adverse impact on a viewshed this must be it.

The assertion by the Draft EIR this is a minor impact because the second story of the Rescue Mission is a dormitory, evidences an elitist attitude ignoring adverse impacts on a community sponsored project for the poor.

ENERGY.

13-9 The Draft EIR has understated the effects of the substantial energy usage this project will have as a permanent ongoing facility. The Draft EIR states that Southern California Edison has the electrical generating capacity available over the five year project life. (Draft EIR p. 3-100) The Draft EIR glosses over the effects of such substantial energy use in the long term by merely claiming that the energy use would remain the same. (Draft EIR p. 4-6) This ignores the fact the Southern California Edison Company has only indicated it has generating capacity available during the 5 year project life without adding new generating sources. This does not mean such capacity will be available in the

13-9 future. Electrical power consumption is increasing in southern California, giving rise to the regular plea by the Southern California Edison Company to its current customers to minimize electrical usage to avoid the need for additional power plants. On a permanent basis, this project adds enormous demand for electrical energy, which the Draft EIR totally fails to evaluate in terms of the long-term capacity of Southern California Edison Company to deliver this power without additional generating sources and the attendant environmental impacts associated therewith.

NOISE.

13-10 This project will have significant adverse noise impacts which have not been adequately mitigated. Noise levels at the Rescue Mission are already at extremely high levels, 66-68dB, primarily because of the freeway. (Draft EIR, p. 3-52) The Draft EIR suggests that the level of freeway noise will drop somewhat with the completion of the freeway improvements. (Draft EIR, p. 3-54) This project is predicted, after construction is completed, to actually raise the ambient noise level at the easterly boundary to 70-72 dB. (Draft EIR, p. 3-59) To provide adequate mitigation, the Draft EIR should require additional sound shielding to lower the level of noise from the project to below the current ambient noise level. There is no reason for this project to increase noise level when some noise reduction is anticipated as the freeway is improved. This Draft EIR puts the burden on the Rescue Mission to assure that sound attenuation within the building is at 45 dB or below (Draft EIR, p. 3-64)

HOUSING.

13-11 There are a number of additional concerns which we believe have not been adequately addressed in the Draft EIR. Initially, the Draft EIR claims 14 positions will be created by this project. (Draft EIR, p. 5-1) There is no indication whether any determination was made as to additional personnel the Southern California Edison Company will require to service this project. The Draft EIR estimates that 1.08 additional affordable housing units will be necessary as a result of this project. (Draft EIR, p. 3-104) While this is considered below the threshold established by the Housing Mitigation Program as a significant adverse impact, in most of southern California and particularly in the City of Santa Barbara the

13-11 creation of any affordable housing units is a significant problem which is not addressed at all in this Draft EIR. Nor is there any discussion of how the other 13 families, who will have someone employed by this project, will meet their housing needs. It is particularly significant in the City of Santa Barbara which in recent years has been unable to meet the housing needs of its working population.

TRAFFIC.

13-12 The Draft EIR has an inadequate analysis of traffic impacts associated with this project during its operational phase. Nowhere in the Draft EIR is there any discussion regarding the current level of service for the intersections which will be utilized by traffic servicing the project. (See, Draft EIR, p. 2-36) While the traffic contributed by this project may itself be small, when added to existing traffic problems associated with the intersections which will have to be utilized; this project in all probability is making worse the level of service which is already at an unacceptable level. The Draft EIR totally ignores the current level of service of intersections which will be utilized to service the project, representing an inadequate review of traffic problems.

WASTE DISPOSAL.

13-13 The Draft EIR does not address how cleaning compounds, chemicals, used membranes and other waste generated by this project will be disposed of, if it cannot be flushed out the waste water outfall. The reference in the Draft EIR to something being "disposed of in an approved manner" (Draft EIR, p. 2-45) does not address the issue of what is being disposed of, where it will be disposed of, the method of disposal and availability of capacity to accept disposal of these items. There is no discussion of the effect of more stringent federal or state ocean discharge requirements on the disposal issue.

BRINE DISCHARGE.

13-14 Similarly, the Draft EIR creates some confusion as to the extent of the brine water which will be discharged through the waste water outfall to the sea. The Draft EIR indicates that the current level of discharge is 6.5 million gallons per day, and that the El Estero Waste Water Treatment Plant is

13-14 permitted to allow up to 11 million gallons of water per day of treated effluent to be discharged. (Draft EIR, p. 2-23, 2-43) The Draft EIR indicates that 13.3 million gallons per day of concentrated sea water brine will be discharged to the ocean via the City's existing ocean outfall for its El Estero Water Treatment Plant. (Draft EIR, p. 2-43) What is uncertain is whether the total discharge, concentrated sea water plus treated effluent, will be 13.3 million gallons per day or 19.8 million gallons per day. If in fact the discharge is 19.8 million gallons, this represents a 300% increase in the discharge of liquid effluent into the ocean from the waste water outfall by the City. Such a significant increase could very well have a substantial impact on the environment of the ocean floor. This also raises questions regarding whether such an extensive increase in discharge would be allowed since the existing permit only allows 11 million gallons per day.

<u>STANDBY COSTS</u>.

13-15 The Draft EIR indicates that the City can stop production of desalinated water from the project once an "adequate water supply" is available. (Draft EIR, p. 2-2) There is no analysis on whether this project can be kept on standby, what maintenance would be necessary, how often the project would need to be operated during any standby period to keep the equipment operational, or the cost of keeping it on a standby basis.

<u>TOXIC CHEMICAL RISK</u>.

13-16 The Executive Summary in the Draft EIR indicates on page S-6 that chlorine and sulfur dioxide will not be stored at the desalination plant or onshore pump station/chemical treatment area. However, the Draft EIR indicates that all these chemicals are and will be stored at the El Estero Waste Water Treatment Plant next door. (Draft EIR, p. 3-65) The quantification of the increased risk associated with this storage should be provided both as to increased risk of occurrence and exposure.

<u>SOLID WASTE CONTAINERS</u>.

13-17 The Draft EIR indicates that the City's Parks Department presently has solid waste containers located on the project site. The Draft EIR does not address where these

13-17 solid waste containers will be relocated to and what potential impact the relocation of these solid waste containers may have upon relocation. (Draft EIR, p. 2-5)

INTAKE.

The Draft EIR points out that the intake of sea water will be handled through sleeving of an existing abandoned outfall line. (Draft EIR, p. 2-12) No consideration is given
13-18 in the EIR to the potential affect of a failure in a portion of the intake line. For example, in the event of a leak in the intake line, could the contents of the abandoned sewer outfall taint sea water then flowing through the intake line, or would there be any significant damage to the marine biology if the intake line is damaged in construction or operation. These issues need to be addressed and considered.

DESIGN QUALITY.

Finally, the Draft EIR in a number of instances indicates that "project components will be designed in accordance with good engineering practice. . . " This raises the question of how does the EIR consultant know that the project components will be designed in accordance with "good engineer-
13-19 ing practice". While it certainly would be an appropriate comment to observe that the project components should be required to meet good engineering practice, it is difficult to imagine how the EIR consultant can conclude that such will occur. This type of comment in the EIR tends to cast doubt upon the objectivity of the EIR consultant.

SUMMARY.

This letter is submitted to advise you of our objections and concerns regarding this Draft EIR. The City and this Draft EIR have lacked the candor to admit this project is really for the construction of a permanent facility or, at very minimum, that the facility could potentially become
13-20 permanent. This has resulted in the failure of the environmental document to give meaningful consideration to alternative sources of water and to gloss over a number of the adverse environmental impacts of the project. We believe that the visual and noise impacts of this project are significant and have not been adequately addressed in the Draft EIR. The

13-20 alternatives, the cumulative impacts and growth inducement sections are hopelessly inadequate given the failure to analyze long term impacts.

13-21 My clients insist on full and complete CEQA compliance to disclose the obvious and not so obvious adverse effects of this facility on the people and environment of the City and County of Santa Barbara. As written it is considered to be legally deficient.

If you have any questions or comments regarding the matter, please do not hesitate to communicate with me.

Very truly yours,

David W. Tredway

DAVID W. TREDWAY

DWT:emb

INITIATIVE MEASURE TO BE SUBMITTED DIRECTLY TO THE VOTERS

NOTICE IS HEREBY GIVEN by the persons whose names appear hereon of their intention to circulate the petition within the City of Santa Barbara for the purpose of placing a measure on the ballot of a special election which it is requested be called pursuant to Elections Code Section 4010 to adopt an ordinance directing the City (1) to develop a permanent desalination facility capable of producing up to 3000 acre-feet per year for use by City residents and an additional 2000 acre-feet per year capacity to provide for a "Drought buffer" and for recharging groundwater basins; (2) to consider regional cooperation in water supply development; (3) to commit to conservation, water efficiency, and waste water reclamation; and (4) to allow for a bond issue to provide for the financing of the desalination project. A statement of the reasons for the proposed action as contemplated in the petition is as follows:

The people of Santa Barbara are faced with inadequate water supplies, and the development of an additional supply is necessary to avoid adverse economic and environmental consequences. City residents should have the opportunity to vote for a desalination project that will provide for emergency drought relief, is cost-effective, is well-suited to local conditions and needs, and is under local control, reliable, and capable of delivering quality water within the next two years. Imported water is of questionable quality, is especially unreliable during droughts and cannot be delivered before 1996 at the earliest. Rate payers cannot afford both imported northern California water and desalination. The City of Santa Barbara can implement a long-term desalination project to assure long-term water supplies and a buffer against drought. Voters in the City must be given the choice.

The City Attorney has prepared the following title and summary of the chief purpose and points of the proposed measure:

TITLE: AN ORDINANCE OF THE CITY OF SANTA BARBARA REQUIRING THE DEVELOPMENT OF A PERMANENT SEA WATER DESALINATION FACILITY WITH A MAXIMUM CAPACITY OF 6000 ACRE FEET PER YEAR AND AUTHORIZING THE ISSUANCE OF REVENUE BONDS TO FINANCE THE FACILITY.

SUMMARY: The initiative/ordinance recites that existing water supplies do not meet the needs of the residents of the City of Santa Barbara (City) and the City obtains its drinking water [illegible] from Cachuma and Gibraltar reservoirs and underlying ground water basins. The initiative/ordinance further recites that Cachuma water deliveries [illegible] a drought emergency was declared in Santa Barbara County in [illegible]. The City [illegible] also [illegible] the City is pursuing a long term water management plan, has [illegible] environmental review for a temporary desalination facility, and that desalination can produce large quantities of water regardless of drought conditions and is a flexible long term water supply option.

The initiative/ordinance would require the City to develop a permanent sea water desalination facility to produce drinking water with a maximum capacity of 6000 acre feet per year. Except during periods of drought emergency the City shall not use more than 3000 acre feet of desalinated water per year. During drought emergencies water use by the City may exceed 3000 acre feet per year as a drought buffer but may not support any permanent new uses. The City is encouraged to join with other local water agencies to build a regional desalination facility, shall increase the use of reclaimed water to at least 1130 acre feet per year by March 1992 and proceed with plans to achieve efficient water use. The ordinance authorizes the City to finance the desalination facility by issuing revenue bonds in an amount up to $25,000,000.00. All actions taken pursuant to the ordinance shall comply with all local, state and federal environmental laws. The initiative/ordinance shall be submitted to the voters of the City at a special election called for that purpose.

ALL SIGNERS OF THIS PETITION MUST BE REGISTERED VOTERS IN THE CITY OF SANTA BARBARA

COMPLETE ALL SHADED AREAS, ALL 5 LINES OF PETITION NEED NOT BE FILLED.
This petition may be circulated by a paid signature gatherer or a volunteer. You have the right to ask.

					DATE SIGNED	FOR USE OF REGISTRAR
Sample	YOUR SIGNATURE AS REGISTERED TO VOTE: Mary Smith			PRINT YOUR NAME: Mary Smith		
	RESIDENCE ADDRESS - NO P.O. BOX'S: 100 State Street	CITY: Santa Barbara	ZIP: 93101			
Line 1	YOUR SIGNATURE AS REGISTERED TO VOTE			PRINT YOUR NAME		
	RESIDENCE ADDRESS - NO P.O. BOX'S	CITY	ZIP			
Line 2	YOUR SIGNATURE AS REGISTERED TO VOTE			PRINT YOUR NAME		
	RESIDENCE ADDRESS - NO P.O. BOX'S	CITY	ZIP			
Line 3	YOUR SIGNATURE AS REGISTERED TO VOTE			PRINT YOUR NAME		
	RESIDENCE ADDRESS - NO P.O. BOX'S	CITY	ZIP			
Line 4	YOUR SIGNATURE AS REGISTERED TO VOTE			PRINT YOUR NAME		
	RESIDENCE ADDRESS - NO P.O. BOX'S	CITY	ZIP			
Line 5	YOUR SIGNATURE AS REGISTERED TO VOTE			PRINT YOUR NAME		
	RESIDENCE ADDRESS - NO P.O. BOX'S	CITY	ZIP			

DECLARATION OF CIRCULATOR - Must be completely filled out by person collecting signatures

I, ____________________ (Print full name), residing at ______________________________ (Print full residence address), am a registered voter of the City of Santa Barbara and circulated the foregoing petition and saw all the signatures appended thereto and that to the best of my knowledge and belief they are the signatures of the persons whose names they purport to be.
The signatures were obtained between ________ (Month and Date), 19___, and __________ (Month and Date), 19___.

I declare under the penalty of perjury that the foregoing is true and correct. ______________________________

Executed by me at ____________________ (City), California, this ____ (Date) day of ______________ (Month) 19___

EXHIBIT A

INITIATIVE MEASURE TO BE SUBMITTED DIRECTLY TO THE VOTERS

TEXT OF INITIATIVE

AN ORDINANCE OF THE CITY OF SANTA BARBARA REQUIRING THE DEVELOPMENT OF A PERMANENT SEA WATER DESALINATION FACILITY WITH A MAXIMUM CAPACITY OF 5000 ACRE FEET PER YEAR AND AUTHORIZING THE ISSUANCE OF REVENUE BONDS TO FINANCE THE FACILITY.

THE PEOPLE OF THE CITY OF SANTA BARBARA DO HEREBY ORDAIN AS FOLLOWS:

Whereas existing water supplies do not meet the needs of the residents of the City of Santa Barbara ("City");

Whereas the City obtains drinking water exclusively from Cachuma Reservoir, Gibraltar Reservoir, and underlying groundwater basins;

Whereas the City delivers reclaimed waste water reclamation of approximately 630 acre-feet per year and plans to increase such deliveries by approximately 500 acre-feet per year by March, 1992;

Whereas water deliveries from the Cachuma Reservoir have been reduced dramatically during the recent drought as the lake approached empty, and it is anticipated that the long term safe yield will be reduced resulting in a long term reduction in the City's allotment;

Whereas Gibraltar Reservoir became dry in November, 1989, due to the recent drought;

Whereas the groundwater basins within the City are currently overdrafted;

Whereas a drought emergency was declared in Santa Barbara County in 1990 following several years of below normal precipitation;

Whereas the City is pursuing a long term water management plan which will include several water supply options;

Whereas in August, 1990, the City commenced environmental review of a temporary desalination facility which is planned to be operational by mid-1992 and which will provide additional water supplies for a period of up to five years;

Whereas the residents of the City acknowledge the need for adequate water supplies to remedy groundwater overdrafting, to provide a buffer in times of drought or other emergency, and to meet projected needs contemplated in City Charter Section 1508;

Whereas desalination can produce large quantities of high quality drinking water regardless of continuing drought conditions and is a flexible long term water supply that can be expanded or turned off as needed;

Whereas State Water is of questionable quality, cannot be available before 1996, is subject to drought conditions, and cannot be expanded or economically turned off as needed;

Whereas City rate payers do not wish to pay for both desalination and State Water and prefer desalination over State Water as a long term water supply option.

NOW, THEREFORE, THE FOLLOWING ORDINANCE IS ENACTED INTO LAW:

SECTION 1. PERMANENT DESALINATION FACILITY. The City of Santa Barbara shall develop a permanent sea water desalination facility to provide high purity water for the customers of the City. [redacted] the currently proposed temporary facility, shall have a maximum capacity of 5,000 acre-feet per year and shall be operational by the time the permits for the temporary facility expire. Quality of the desalinated water shall meet primary and secondary drinking water standards.

Except during periods of drought emergency when the usable water in storage at the Cachuma Reservoir is below 100,000 acre-feet, the amount of desalinated water used by the City shall not exceed 3,000 acre-feet per year. Water used by the City in excess of 3,000 acre-feet per year shall only be used as a "drought buffer" during periods of drought emergency and shall not be used to support (directly or indirectly) any permanent new uses. The drought buffer may be used on a temporary basis to recharge the City's underlying groundwater basins.

SECTION 2. REGIONAL DESALINATION PROGRAM. If economically and environmentally feasible, the City is encouraged to join with other water agencies in Santa Barbara County to build a regional desalination facility. Such a facility shall conform with Section 1 for the City's portion thereof.

SECTION 3. CONSERVATION, EFFICIENCY, AND RECLAMATION. The City shall proceed with its plans to achieve efficient water use, conservation, and waste water reclamation as a means to avoid present and future water shortages.

(To provide additional water supplies and security against drought, the City shall increase the use of reclaimed water within the City. The goal shall be to increase use of reclaimed water to at least 1130 acre-feet per year by March, 1992, unless it is determined to be financially or technically infeasible).

SECTION 4. CONSISTENCY WITH CHARTER SECTION 1508. The intent of this ordinance is to provide adequate water supplies, including drought water supplies, for existing and reasonable future development within the limits contemplated in Section 1508 of the City Charter (Measure E). This measure shall not be construed in a manner which is inconsistent with the mandates of Section 1508.

SECTION 5. FINANCING. In order to finance a permanent desalination facility capable of producing up to 5,000 acre-feet per year, or to finance the City's portion of a regional facility as set forth in Section 2, the City is authorized to issue revenue bonds in an amount not to exceed $25,000,000.

SECTION 6. EXPANSION. Prior to incurring any cost to expand the desalination facility beyond the limits in Section 1, or prior to contracting to increase its allotment from the regional facility, the City shall obtain the approval of a majority of the voters.

SECTION 7. OTHER BALLOT MEASURES. It is the intent of this Ordinance to provide for a single major new permanent cost-effective water supply to meet the City's current and anticipated water needs, including drought year supplies, and to avoid unnecessary economic and environmental costs. In the event that any measure authorizing or requiring the City to acquire water from the State Water Project is placed on the ballot at the same election as this measure, only that measure which receives the most votes shall be enacted into law.

SECTION 8. OTHER CITY ORDINANCES. To the extent that the provisions of this Ordinance conflict with any prior ordinance or measure previously enacted by the City or the voters of the City, the provisions of this Ordinance shall control.

SECTION 9. COMPLIANCE WITH ENVIRONMENTAL LAWS. All actions taken pursuant to this Ordinance shall be in compliance with all local, state and federal environmental laws and regulations.

SECTION 10. SEVERABILITY. This Ordinance shall be liberally construed and applied in order to fully promote its underlying purposes. If any provision of this Ordinance or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions of the Ordinance which can be given effect without the invalid provision or application, and to this end the provisions of the Ordinance are severable.

SECTION 11. ELECTION. This Ordinance shall be submitted to a vote of the people of the City at a special election in compliance with the requirements of Section 4010 of the California Elections Code.

SECTION 12. EFFECTIVE DATE. Pursuant to Section 4013 of the California Elections Code, this Ordinance shall take effect 10 days after a majority vote is declared by the City Council.

The Desal Initiative

Water for Everyone Today, P.O. Box 22836, Santa Barbara, Ca. 93121, (805) 963-8538

Water for Everyone Today
P.O. Box 22836
Santa Barbara, CA 93121
(805) 963-8538

Endorsed by:

Santa Barbara Alliance
Citizens for Goleta Valley
League of Conservation Voters
Sierra Club (Los Padres Chapter)
Jeff Young, Chair
David Anderson
Marty Blum
Susan Bott
Richard Bradley
Camzu A. Clark
Carolyn Collins
Matt Dobberteen
Fred Eissler
Richard Flacks
Frank Frost
Gordon Fulks
Michael H. Gray
Mabel Gunderson
Sue Higman
Bob Klausner
Hal Kopeikin
David Landecker
Christina Lange
Greg Lockwood
Ed Maschke
Harriet Miller
Joanne Miller
Karen Molinari
David & Kitty Peri
Harriett Phillips
Lyle G. Reynolds
Tom Rogers
Selma Rubin
Kim Schizas
Patricia Shewczyk
Sarah Shoresman
Arve Sjovold
Robert Sollen
Bill Wallace
(partial list)

December 28, 1990

Dear Friends,

"We want water." Who can argue with that? Because of the drought, the development of an additional supply is necessary to avoid adverse economic and environmental consequences.

Let us introduce you to **the best choice for new water.** We have formed a new citizens group - **Water for Everyone Today** - because there is a local alternative water supply far superior to State water. The source? **"Desal."**

We must have a new water source by 1992, when Cachuma may run dry. Desal is a proven technology which converts sea water into high quality drinking water. Desalinated water is **drought-proof** and less expensive than other sources. **A desal water project can deliver water as early as 1992.** State water cannot solve our immediate shortage—it cannot deliver water until 1996 to 1998 at the earliest. Nor would State water be effective in addressing our long term needs. We need a **locally controlled, permanent** solution to the water crisis.

We need your help to get reliable, flexible desalinated water to preserve our quality of life and provide for our future.

By pushing their initiative for a special election this coming June, the State water proponents want us to choose between **State water and no water**. That is not a choice. Because Desal is a better water supply, we are sponsoring an alternative initiative. We believe the voters will see the clear advantages of Desal, and vote for our initiative rather than State water.

A big advantage of our proposed desalination project: **we'll own it and we'll control it.** Desal can be expanded during drought, and turned off during rainy periods (so we won't be paying for water when nature provides it). Our initiative also requires the City to store water as a "drought buffer" and to replenish groundwater basins. **With State water we would have no control over cost increases, drought rationing allotments, or the environmental impacts to northern California.**

We must gather approximately 7000 signatures of registered City voters by the first week of February to be on the ballot in June. That's a lot of work in a very short time. To do the job, we need 800 volunteer hours and $15,000 to cover printing, mailing and organizing costs.

We hope you'll agree that desalination is the best new water source for our City. We deserve a choice, and the Desalination Initiative gives us this choice.

the [illegible]

The new year is upon us. We are looking for your help. Choosing the most reliable, environmentally sound water supply for the future of Santa Barbara is a decision that all of us must help make. **The Desal Initiative petition is enclosed.**

Please help **W.E.T.** get desalination on the ballot next June. **Here's what you can do:**

1) Sign, date and put your address on the enclosed petition. Make sure you fill in your declaration of circulator at the bottom.

2) Gather signatures of voters registered in the City of Santa Barbara on the enclosed initiative petition. Again make sure that you also fill in the declaration of circulator at the bottom or the petition will be invalid.

3) Complete the enclosed volunteer card. Let us know if weekends or weekday evenings are better for your volunteer time.

4) Make a donation to support our signature drive, payable to: **"Water for Everyone Today."**

5) Return the above in the envelope provided, as quickly as you can.

With Measure E, we now have growth controls in place to protect our city. Let's make sure we get the water we need, when we need it, to guard against drought in the future. Working together we can make the difference!

Sincerely,

Jeff Young	Marty Blum	Tom Rogers
Jeff Young Chairperson	Marty Blum City Planning Commissioner	Tom Rogers County Supervisor, 2nd District

The Desal Initiative

Water for Everyone Today, P.O. Box 22836, Santa Barbara, Ca. 93121, (805) 963-8538

December 12, 1990

Water for Everyone Today
P.O. Box 22836
Santa Barbara, CA 93121
(805)963-8538

Endorsed by:
Santa Barbara Alliance
Citizens for Goleta Valley
League of Conservation Voters

Jeff Young, Chair
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Bob Klausner
David Landecker
Greg Lockwood
Ed Maschke
Harriet Miller
Joanne Miller
Harriett Phillips
Lyle G. Reynolds
Tom Rogers
Selma Rubin
Kim Schizas
Patricia Shewczyk
Sarah Shoresman
Robert Sollen
Bill Wallace

Dear Friends:

"We Want Water!" Who can argue with that?!? Because of the drought, everyone in Santa Barbara now sees that we must add to our water supplies.

A group calling itself "We Want Water" is pushing an initiative to require importation of Northern California water to Santa Barbara. Before jumping on the State water bandwagon, let us introduce you to a better choice. We have formed a new citizen group - **Water for Everyone Today** - because we think there is a water supply available that is far superior to State water, and we need you to help us get this reliable, new water.

The source? **Desalination of ocean water!** It's abundant, drought-proof, less expensive in the long run, and it can be delivered at least 3 years sooner than State water. Proven technology can convert sea water into high quality drinking water-- as much as we need, whenever we need it.

In fact, the City Council is moving rapidly forward to have a desalination plant built by 1992 as an emergency water source to replace diminished Lake Cachuma supplies. Why "Desal" beats State water as a permanent source is explained on the enclosed fact sheet. Please read it carefully.

Last year, you helped pass **Measure E**, stopping runaway commercial growth from wrecking our city. **We couldn't have won without you.**

Now, we need your help to get reliable, affordable desalinated water to preserve our quality of life and provide for our future.

By pushing their initiative for a special election this coming June, the State water proponents want the voters to have no other choice. Because Desal is a better water supply, we are sponsoring an alternative initiative. We believe the voters will see the clear advantages of Desal, and vote for our initiative rather than State water.

The Desalination Initiative petition is enclosed. We must

...continued on other sic

gather nearly 7000 signatures of registered city voters by the beginning of February to be on the ballot in June. That's a lot of work in a very short time. To do the job, we need 500 volunteer hours and $15,000 to cover printing, mailing and organizing costs.

After reading the initiative and our fact sheet, we hope you'll agree that desalination is the best new water source for Santa Barbara. We as voters deserve a choice, and the Desalination Initiative gives them this choice.

We know that the Holiday Season is a bad time to be looking for your help. But choosing the most reliable, environmentally sound water supply for the future of Santa Barbara is a decision that all of us must help make. Any time or donation you can give will make all the difference.

Please help us - **Water for Everyone Today** - get desalination before the voters next June. **Here's what you can do:**

1) Sign the enclosed peititon with your name, address, city , state and zip, and date.
2) If you can get additonal signatures, please do so! Make sure you complete the "Declaration of Circulator" section at the bottom of the petition if you get more signatures.
3) Complete the enclosed volunteer card and we will call you about helping to gather more signatures between now and February.
4) Make a donation to support our signature drive, payable to: **"Water for Everyone Today ."**
5) Return all three in the envelope provided, as quickly as you can.

Because of your commitment in the past, we now have growth controls in place to protect Santa Barbara. Let's make sure we get the water we need, when we need it, to guard against drought in the future.

Once again, we're counting on you to make the difference.

Sincerely,

Marty Blum

Marty Blum

Tom Rogers

Tom Rogers

COASTAL BRANCH & EXTENSION ESTIMATED COSTS

PROJREV.WK1 SY ID#1 moved from SY2 to SY1.
14-Dec-90 *JMS*

AGENCY	*Reach*	Entitlement [afy]	INPUT Amount Taken [afy]	Reach Deliveries [afy]	Cumulative Reach Flows [afy]	Unit Cost [$/af]	Annual Purveyor Cost $1000's	Annual Reach Cost $1000's	Cumulative Annual Costs $1000's	*Reach Capital Cost $1000's*	Local Project (Capital) Costs: Reach Unit Project Cost [$/af]	Cumlatv Unit Project Cost [$/af]	Purveyor Project Cost [$]
SLO Reach 33A	*33A*	11,270	11,270	11,270	55,301	391	4,411	4,411	4,411	*166,467*	[redacted]		
SLO Reach 34	*34*	9,730	9,730	9,730	44,031	395	3,844	3,844	8,256	*21,533*			
SLO Reach 35	*35*	4,000	4,000	4,000	34,301	463	1,853	1,853	10,109	*34,497*			
Cuyama CSD	*35A*	1,000	0	0	30,301	470	0	0	10,109	*0*			
Guadalupe, City of	*MH1*	300	300				153			[illegible]			121,000
Santa Maria, City of	*MH1*	11,300	11,300				5,764			[illegible]			4,544,000
Southern California Water	*MH1*	3,000	3,000	14,600	30,301	510	1,530	7,448	17,556	*12,184*	402	402	1,206,000
Casmalia CSD	*MH2*	23	23				16						38,000
Vandenberg AFB	*MH2*	8,000	8,000				5,581						13,373,000
Vandenberg Village CSD	*MH2*	600	600				419						1,003,000
Mission Hills CSD	*MH2*	500	500				349						836,000
Lompoc, City of	*MH2*	4,000	4,000	13,123	15,701	698	2,791	9,156	26,712	*19,933*	1,270	1,672	6,687,000
Buellton CSD	*SY1*	578	578				1,161						7,478,000
Santa Ynez RWCD, I.D. #1	*SY1*	2,000	2,000	2,578	2,578	2,009	4,018	5,179	31,891	*29,046*	11,267	12,938	25,877,000
Goleta WD	*SY2*	4,500	0				NA						NA
Morehart Land Company	*SY2*	200	0				NA						NA
Santa Barbara Research C	*SY2*	50	0				NA						NA
La Cumbre MWC	*SY2*	1,000	0				NA						NA
Santa Barbara, City of	*SY2*	3,000	0				NA						NA
Montecito WD	*SY2*	2,185	0				NA						NA
Summerland CWD	*SY2*	300	0				NA						NA
Carpinteria CWD	*SY2*	2,700	0				NA						NA
SBCFCWCD	*SY2*	250	0	0	0	NA	NA	NA	NA	*NA*	NA	NA	NA
MIDSIZED to Santa Ynez		SB Total	30,301							[illegible]			NA
No State Water to South Coast.													
None to Cuyama or FCD		Entitlement	Q Taken	Reach Q	Sum Q	Unit	Annual	Annual	Annual	Capital	Unit	Unit	Total Capital

COASTAL BRANCH & EXTENSION ESTIMATED COSTS

OJREV.WK1 SY ID#1 moved from SY2 to SY1. 13-Dec-90 JMS GENCY	Reach	Entitle-ment [afy]	INPUT Amount Taken [afy]	Reach Deliveries [afy]	Cumulative Reach Flows [afy]	Unit Cost [$/af]	Annual Purveyor Cost $1000's	Annual Reach Cost $1000's	Cumulative Annual Costs $1000's	Reach Capital Cost $1000's	Local Project (Capital) Costs: Reach Unit Project Cost [$/af]	Cumulativ Unit Project Cost [$/af]	Purveyor Project Cost [$]
O Reach 33A	33A	11,270	11,270	11,270	69,236	368	4,149	4,149	4,149	*184,687*			
O Reach 34	34	9,730	9,730	9,730	57,966	368	3,578	3,578	7,727	*24,793*			
O Reach 35	35	4,000	4,000	4,000	48,236	423	1,691	1,691	9,418	*39,097*			
yama CS	35A	1,000	0	0	44,236	427	0	0	9,418	*0*			
adalupe, City of	MH1	300	300				138			[illegible]			95,000
ta Maria, City of	MH1	11,300	11,300				5,193						3,577,000
thern California Water	MH1	3,000	3,000	14,600	44,236	460	1,379	6,709	16,127	*14,004*	317	317	950,000
malia CSD	MH2	23	23				14						28,000
denberg AFB	MH2	8,000	8,000				4,839						9,789,000
denberg Village CSD	MH2	600	600				363						734,000
sion Hills CSD	MH2	500	500				302						612,000
poc, City of	MH2	4,000	4,000	13,123	29,636	605	2,420	7,939	24,065	*26,883*	907	1,224	4,895,000
Iton CSD	SY1	578	578				501						2,005,000
a Ynez RWCD, I.D. #1	SY1	2,000	2,000	2,578	16,513	866	1,733	2,233	26,299	*37,076*	2,245	3,469	6,938,000
ta WD	SY2	4,500	4,500				4,573						19,959,000
hart Land Company	SY2	200	200				203						887,000
a Barbara Research C	SY2	50	50				51						222,000
umbre MWC	SY2	1,000	1,000				1,016						4,435,000
a Barbara, City of	SY2	3,000	3,000				3,049						13,306,000
ecito WD	SY2	2,185	2,185				2,220						9,691,000
nerland CWD	SY2	300	300				305						1,331,000
nteria CWD	SY2	2,700	2,700				2,744						11,976,000
CWCD	SY2	250	0	13,935	13,935	1,016	0	14,160	40,459	*13,468*	966	4,435	0
LSIZED	SB Total		44,236							[illegible] Local			[illegible]

eries per DWR Assumptions but
to Cuyama or FCD

Entitlement	Q Taken	Reach Q	Sum Q	Unit	Annual	Annual	Annual	Capital	Unit	Unit	Total Capital

Response 13-1: Refer to Response 7-6.

Response 13-2a: Refer to Response 7-6.

Response 13-2b: The Project Description in Sections 2.1 and 2.8 describes the options for decommissioning of the facility at the end of the permitted project life. Abandonment operations have been considered in the analysis of environmental impacts. Abandonment operations would involve less disruption and impacts than the construction effort due to the modular, portable nature of most of the above ground equipment and the abandonment in place of below ground pipelines. Impacts resulting from temporarily extended operation of the facility in the event the drought continues 5 years beyond 1992 are summarized in Section 4.3. Continued operation under any other circumstances is outside of the conditions within the project description (i.e., definition of the project) and thus outside of the necessary scope of this document.

Response 13-3: Refer to Response 7-6. Tankering and desalination were compared on an equivalent basis, i.e., a five year project life. The commentor's claim that tankering would fare more favorably if costs were compared on the basis of a 20 year project life is irrelevant and unsupported, as the project is defined with a five year life span and as costs for a desalination project with a 20 year life have not been provided. The reference to costs from Chevron's Gaviota facility does not provide any basis for the cost estimate. The Chevron Gaviota facility is required to produce a much smaller quantity of water which increases unit costs.

Response 13-4: The Council Agenda Report which is presented in Appendix D of the EIR summarizes environmental issues associated with the tankering project which were reviewed in detail by the Alternative Water Supply Review Panel. As discussed in the Council Agenda Report, the Santa Barbara County Air Pollution Control District's preliminary analysis indicated that the tankering projects could result in large increases in air emissions in the South Coast region and would include emissions of NO_x and SO_x while tankers are traveling in the Santa Barbara Channel and while berthed at the unloading facility. In addition, service vessel traffic, unloading pumps, onshore pump stations, and water treatment facilities could also result in increased air emissions. Detailed air quality impact analyses could not be performed since specific offshore mooring locations, tanker size(s), propulsion systems, emission control equipment, and onshore pumping requirements were not known.

The EIR discussion of potential impacts to sensitive onshore habitats associated with the tankering projects is based on the fact that much of the coastline between Ellwood and Naples where the offshore subsea pipelines were proposed to come onshore is non-urbanized and is considered to be environmentally sensitive habitat. The potential onshore pump station locations and pipeline routes to Shulte and/or Glen Annie Reservoir were planned to go up riparian drainages in order to avoid engineering constraints and/or disturbance of the coastal bluffs in this area. This would require, at a minimum, disturbance of environmentally sensitive creek habitat near the coastline.

The statement by the commentor that the only other information that is presented in the DEIR regarding tankering relates to the relative permitting complexity of tankering versus desalination is incorrect. The Council Agenda Report in Appendix D of the DEIR discusses the following issues: chemical use and storage; product water quality; air quality; marine life and aquatic biology; sensitive onshore habitat; noise; aesthetics; archaeology; energy consumption; construction impacts; risk of upset; recreation; permitting and licensing; and cost.

Response 13-5: Refer to Response 7-6.

Response 13-6: Refer to Response 7-6 for discussion of the distinction between this temporary project and a permanent water supply.

As described in Section 5.0 of the EIR, the long-term potential for growth in the City of Santa Barbara is determined by policies established in the City Charter, the General Plan, and the Zoning Ordinance. However, both short-term and long-term water shortages have resulted in the adoption of ordinances restricting development pending the easing of the drought and the development of long-term water supplies. Thus, there is considerable confusion surrounding the relationship between growth and water supplies.

Overall population growth in the City is governed by policies established in the City's Housing Element of the General Plan and implemented through residential zoning. Non-residential growth is limited by Charter Section 1508 and the recently adopted Allocation Based Zoning system. These policies and zoning restrictions establish an upper limit for the amount of growth which can occur.

In 1986, in recognition of a pending shortfall in City water supplies relative to demand, the City suspended new development requiring new water use. Following the adoption of an action plan to curtail demand and develop supplies, the Long-Term Water Ordinance was

adopted in 1988. This ordinance restricts both residential and non-residential development until new long-term water supplies become available. Only pending and approved non-residential projects and those non-residential projects which can demonstrate no new water use can proceed. For new residential development, projects either have to have "pending" or "approved" status or must receive an allocation in one of several limited categories. Thus, this ordinance, which remains in effect, slowed the rate of growth by prohibiting new projects where there is no history of water use and where there is no new water allocation.

Due to the severe water shortage in 1990 the City Council adopted the Stage II and III Drought Restrictions which further limited new growth. New water allocations (up to 50 acre feet per year allowed under the Long Term Water Ordinance) were suspended and more stringent retrofit requirements were instituted for pending and approved and "no new water use" projects.

Thus, at the present time, development is restricted by two levels of constraint beyond the normal limits of the General Plan and zoning. Implementation of the proposed emergency desalination project could potentially lift only the most stringent of these constraints, i.e., the Drought Restrictions. Under these conditions, the 50 acre-feet per year of new water allocations which were allowed under the Long Term Water Ordinance could resume. The environmental impacts and potential growth inducement of the allocation program were analyzed in the EIR on the Five Year Water Policy Action Plan. Whether or not the Drought Restrictions would in fact be lifted would depend on rainfall amounts and the status of the other supplies, including groundwater. Given the restrictions on use of the emergency project to replacement of supplies lost due to the drought, this project could not be used as a supplemental water source which would allow for lifting of the Long Term Water Ordinance.

Thus, this project could provide relief from the severely reduced development rate imposed by the drought, but would not allow resumption of "normal" development rates, unconstrained by water shortages. Long-term shortages will continue until a long-term project is approved and implemented.

An analysis of the development potential under various scenarios provides some perspective for this discussion. Under the requirements of the General Plan, City Charter Section 1508 and the City's Zoning Ordinance, the non-residential development potential out to the year 2010, assuming no limitations due to water supplies or other resources, is 3 million square feet in addition to the 1988 baseline. (The 1988 baseline included approximately 20 million square feet of commercial/industrial development and 15 million square feet of institutional

development.) Under the same assumptions for residential development, approximately 4,100 housing units could be added to the estimated 36,000 existing in 1990.

As described previously, the Drought Restrictions and the Long Term Water Ordinance currently reduce the development potential. Based on historic rates, residential development would be expected to occur at a rate of 244 units per year if no water restrictions were in place. At this rate, complete buildout of the residential units would occur in approximately 17 years. Under the constraints of the Long Term Water Ordinance, limiting new residential development to pending and approved projects and those projects which receive a water allocation, it is estimated that approximately 170 units could be built each year, based on allocation levels and water use factors. Under the even more stringent Drought Restrictions currently in place, it is estimated that 30 units per year will be constructed, based on the experience of the past year. Given the limited data available, it is difficult to separate the effect of the drought restrictions from other factors, such as general economic conditions and the housing market.

The rate of non-residential development is less directly affected by water restrictions. Under Charter Section 1508, all non-residential development must occur in one of 5 categories. A total of 1.6 million square feet of the development potential is in the Pending Projects and Approved Projects categories. These projects can proceed under current conditions. The Drought Restrictions impose a requirement to participate in an offsite retrofit program, resulting in water savings for the City, but this is not assumed to stop any projects. Another 0.6 million square feet is in the Small Additions category which also can proceed, assuming a history of water use for the associated existing development would allow on and off-site retrofitting to meet the requirements of the Drought Restrictions and the Long-Term Water Ordinance. The remaining 0.5 million square feet in the Vacant Property category and 0.3 million square feet in the Community Priority Category which may require new water use are potentially affected by the availability of water supplies. If new water use is required, such a project must receive an allocation under the Long Term Water Ordinance. These allocations have been suspended under the Drought Restrictions. Lifting of both the drought restrictions and the Long Term Water Ordinance would eliminate all constraints on these two categories related to the availability of water.

Response 13-7: Refer to Response 7-6. The issue regarding above-ground power poles raised by the commentor pertains to the discussion of consistency with local plans, not the discussion of visual impacts. The City's criteria for significant visual impacts are related to obstruction of significant views, such as the coastline or mountains. In this specific instance, the presence of three additional power poles does not constitute a significant visual impact because the City's threshold of significance has not been exceeded. The inconsistency with

local plans in the event of a possible extension of the project during a prolonged drought would continue.

Response 13-8: Comment noted.

Response 13-9: Refer to Response 7-6.

Response 13-10: Refer to Response 12-14. The proposed project as mitigated will limit noise levels to acceptable levels based on City noise standards. There is no justification for requiring noise levels to be below current ambient noise levels in this industrial area.

Response 13-11: As acknowledged by the commentor, the EIR estimated that 1.08 additional affordable housing units will be necessary as a result of the project, and that this is below the threshold criteria of two units established by the Housing Mitigation Program. No significant effects will occur related to the estimated addition in demand of 1.08 affordable housing units. Southern California Edison (SCE) has stated that no additional SCE employees will be required to service the electrical facilities associated with the proposed desalination project (Terrill, 1991).

Response 13-12: The City's traffic analysis which was performed for the project determined that the thresholds in the City's Circulation Element will not be exceeded and therefore traffic impacts will be insignificant. Refer to the Traffic Supplement prepared by the City's Transportation and Traffic Manager which is presented at the end of Appendix C in the EIR.

Response 13-13: Section 2.6.1.6 of the EIR discusses disposal of the following types of project related wastes: construction related wastes; filtered marine residues; spent filter cartridges; and RO membrane elements. The following amounts of solid waste are estimated to require annual disposal on an average basis for the proposed 10,000 AFY facility: RO membranes = 50 cubic yards and filter cartridges = 26 cubic yards. As stated in the EIR, it is estimated that filter backwash solids to be disposed of offsite at an approved disposal location will amount to 1.7 to 5.1 cubic yards per day depending on seawater conditions. Non-hazardous solid wastes will be disposed of at a Class III municipal landfill such as Tajiguas or other approved facility, as appropriate. As discussed in Section 2.6.1.7 of the EIR, all cleaning chemicals will be neutralized to City standards prior to discharge to the City sanitary sewer. The commentor's request for a discussion of currently unidentified but possibly more stringent future ocean discharge requirements is not relevant. Refer to Response 9-5 for more information.

Response 13-14: The commentor is referred to Table 3.3-1 in the EIR which lists the combined discharge quantity of 22.35 mgd for the proposed 10,000 AFY facility. This combined discharge includes the brine discharge, membrane backwash (following clarification), and treated effluent from the El Estero WWTP. The discharge estimate of 9.0 mgd for El Estero is equal to the flow in 1988 -- it is assumed the flow will increase again once the desalination plant is on line. The combined discharge volume for the proposed 10,000 AFY project is approximately double the currently permitted discharge volume, but still only about two-thirds of the design capacity (over 30 mgd) of the outfall. The outfall and diffuser as built, were originally designed for a regional treatment facility (that was not built), therefore there is substantial excess discharge capacity. The EIR assesses the combined discharges associated with the proposed 10,000 AFY desalination facility, as well as the 7500 AFY alternative and the 5000 AFY "start-up" facility. No significant ocean discharge related impacts are predicted for any of the assessed scenarios, assuming stipulated mitigation measures, including ocean monitoring, are in place. The Regional Water Quality Control Board will consider the combined discharge characteristics, including increased flow volume during the National Pollutant Discharge Elimination System permitting process, including development of any necessary Waste Discharge Requirements for the project.

Response 13-15: Refer to Response 4-1.

Response 13-16: Refer to Response 8-2.

Response 13-17: The City currently plans to relocate the solid waste containers which are stored at the proposed desalination plant site on Yanonali Street to the adjacent Corporation Yard. No adverse impacts associated with relocation of these containers to the Corporation Yard will occur.

Response 13-18: The abandoned outfall line will be sleeved with a polyethylene insert from the access point at the weir box on the beach (refer to Figures 2-1 and 2-7 in the EIR). The abandoned outfall line has not been used for many years and has been thoroughly flushed by the ocean/tidal fluctuations over the years. The welded sections of 40 foot long polyethylene pipe inserts will be inspected prior to insertion into the outfall and the proposed intake pipeline will be operated under pressure which will limit the potential for inflow except at the actual intake structure. In addition, the incoming seawater will be chlorinated, pre-filtered, passed through RO membranes, and chlorinated again thereby precluding any potential contamination related concerns. The proposed construction and

operational procedures for the proposed intake line are discussed in the EIR and are not predicted to result in significant adverse effects to marine biology.

Response 13-19: The City Public Works Department and Ionics are joint applicants with respect to obtaining permits for the proposed desalination project and are committed to designing, constructing, and operating the proposed facilities in accordance with all applicable regulations and requirements as well as "good engineering practice". The City's commitment to maintaining high standards of environmental compliance for this project as well as their final review and approval authority for Building Permits are considered to be indicative that "good engineering practice" will not only be expected but also required.

Response 13-20: Refer to Response 7-6.

Response 13-21: The EIR is a good faith effort at full disclosure as required by CEQA, and meets or exceeds all requirements of CEQA.

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CITY OF SANTA BARBARA
PLANNING DIVISION

CPA

CITIZENS PLANNING ASSOCIATION OF SANTA BARBARA COUNTY, INC.

January 22, 1990

Environmental Review Committee
City of Santa Barbara
P.O. Box 1990
Santa Barbara, CA 93101

RE: DEIR FOR CITY OF SANTA BARBARA'S AND IONICS, INC. TEMPORARY EMERGENCY DESALINATION PROJECT (SB-106-90)

Dear Chairman Woodward and Members of the Committee:

Citizens Planning Association's Water Committee has reviewed the DEIR for the City of Santa Barbara's and Ionics temporary emergency desalination project. In the main, we are supportive of a desalination plant for Santa Barbara. Our objective here is to raise some concerns about the DEIR, which should be rectified so that the project is as legally defensible as possible.

In our opinion, the DEIR should more adequately discuss or review:

14-1 1) Who pays for what, and how the water is to be used (Section 2.0, Project Description). Mr. Steve Mack did an analysis of the City's water needs, this should be included in the document as well as the needs of our neighboring communites.;

14-2 2) Discuss more specifically at what capacity or point the plant would be shut off (Section 2.1, Purpose and Need for the Project);

14-3 3) Smaller capacity loads (i.e. 2,500 - 5,000 AFYs), as specified by the project (Section 2.4.1, Desalination Facility). These issues can be discussed as Alternatives, but should be included in the document.

14-4 4) The fact that 8,000 AFYs would overtax the existing city water system (Section 2.4.3.4, Finished Water Tie-In Lines). A more thourough analysis of the issues involved in distributing water for a 10,000 AFY capacity plant;

14-5 5) Whether or not the solid wastes are hazardous, and how they will be managed,(Section 3.4.2, Environmental Impacts);

14-6 6) Costs, benefits, and impacts of second-pass filtration, which would provide better quality water (Section 3.7.2.2, Finished Water Quality);

14-7 7) What effect the energy required to operate the plant will have (Section 3.11.2, Environmental Impacts);

14-8 8) Distillation as an alternative process to reverse osmosis (Section 7.2.3, Alternative Deslination Technologies);

14-9 9) Monitoring ongoing environmental impacts of the plant (Section 9.3, Overall Project Monitoring).

Moreover, the DEIR should include discussions of:

14-10 1) Alternatives to a large-capacity desalination plant, i.e. a smaller-capacity plant in conjunction with water tankering from Canada, water reclamation, and/or more assiduous conservation;

14-11 2) The long-term effects of this new water supply on growth and development in Santa Barbara.

It is our recommendation that these issues be further addressed and incorporated in the final draft of this DEIR.

Sincerely,

Arve R. Sjovold

Arve Sjovold
Chairman,
Water Committee

Response 14-1: Refer to Table 2-1 in the EIR which summarizes the City's pre-drought water demand, pre-drought water supply, current projected water deliveries, and the projected available annual water supply through 1997 without the desalination project if the drought continues. This tabular summary is excerpted from Mr. Steve Mack's analysis of the City's water needs. The water to be produced by the desalination project will be used to replace supplies which are unavailable due to the drought and the water costs will be reflected in the rates for delivered water. Assessments of the water needs of neighboring communities is out of the scope of this EIR, but the City has stipulated that any desalinated water which is sold to neighboring communities can only be used to replace supplies which are unavailable due to the drought.

Response 14-2: The proposed project will operate for up to five years to replace normal supplies which are unavailable due to the drought. As stated in Section 2.1 of the EIR, the City will not purchase water for the City's use under its contract with Ionics when other water supplies available to the City meet pre-1988 demand on a safe yield basis, including 100,000 AF of storage in Lake Cachuma and replenishment/recovery of the City's groundwater basins. Refer to Response 12-5 regarding groundwater basin replenishment estimates.

Response 14-3: The project description and environmental assessments presented in the EIR cover the proposed 10,000 AFY capacity facility as well as the 7500 AFY alternative. In addition, the quantity and estimated quality of the combined selected constituents are presented in Tables 3.3-1 through 3.3-6 of the EIR for various discharge scenarios including the 10,000, 7500, and 5000 AFY capacity desalination plants. The 5000 AFY capacity assessment is included since the 10,000 or 7500 AFY plants would start out as a 5000 AFY plant until the additional capacity was installed 3 to 6 months later. The assessments of the proposed desalination facility capacity of 10,000 AFY as well as the 7500 AFY alternative are worst-case analyses as required by CEQA. Impacts for some resources would be proportionately less at the lower capacities. Since no unavoidable adverse significant effects were identified for the larger capacities, none would be expected for a 2500 or 5000 AFY facility either.

Response 14-4: Refer to the Initial Study in Appendix A which was presented to the ERC for public hearings on February 22, 1991. This Initial Study replaces the preliminary environmental assessment which was contained in Appendix A of the DEIR. The ERC adopted the staff recommendation that a Negative Declaration (ND) be prepared due to the finding that the project will not result in any significant adverse impacts. That ND is hereby incorporated into this EIR.

Response 14-5: Refer to Response 9-5.

Response 14-6: Refer to Response 9-31.

Response 14-7: Section 3.11 of the EIR discusses the project's energy requirements, sources of energy, necessary tie-in facilities to Southern California Edison (SCE) electrical supply, air emissions which could theoretically be attributed to the generation of 8 MW of electrical power for the proposed 10,000 AFY facility, and the geographic areas where SCE predicts the emissions will occur. Section 3.11 also discusses applicant-committed mitigation measures related to energy conservation and/or efficiency. According to SCE, excess capacity within their system is more than adequate to supply the proposed project over the 5 year project life, and all generation facilities involved have already undergone environmental review/regulatory permitting and air quality impacts have been mitigated, as appropriate. For reference, SCE has reported that peak demand on June 26, 1990 was 17,647 MW. At that time SCE's on-line generation resources were 20,731 MW. The proposed 8 MW energy requirement of the desalination represents 0.26 percent of the 3084 MW of reserve capacity at that time (Terrill, 1991). Although the proposed project will require substantial energy to operate, no significant effects related to energy use are predicted.

Response 14-8: Distillation has been considered in detail by the City as an alternative to RO. Refer to Responses 8-1, 9-2, and Table 7-2 in the Final EIR for more information.

Response 14-9: As discussed in Section 9.2.4 of the EIR, a Condition of Approval will be placed on the project requiring that a mitigation monitoring coordinator be hired to assure compliance with the mitigation measures stipulated in Section 9.2 of the EIR. The City as Lead Agency for CEQA compliance will revise the mitigation requirements on an ongoing basis during the operational phase of the project, as appropriate, based on the data gathered during the mitigation monitoring program. Refer to Response 17-19 for an elaboration of the marine biology/water quality mitigation monitoring program which will be performed.

Response 14-10: The City Alternative Water Supply Review Panel, ERC, and City Council reviewed more than five tankering proposals in detail. The tankering alternative was determined to be less desirable by the City than desalination for several reasons including: environmental effects, ability to obtain permits in a timely manner, and costs of delivered water. Refer to Appendix D of the EIR and Response 13-4 for more information. The City is already actively pursuing and encouraging increased conservation and wastewater reclamation as discussed in Section 7.3.4.2 of the EIR, as revised. The residents of Santa Barbara have generally met or exceeded the City's conservation goal of a 45 percent reduction in potable water demand during the drought and the City is expanding the phased

wastewater reclamation program. Water savings from conservation and reclamation are assumed in the supply versus demand numbers in the EIR and cannot be relied upon to reduce the size of the proposed desalination plant.

Response 14-11: The proposed project is a temporary emergency water supply project to replace a portion of supplies that are currently unavailable due to the drought. The proposed desalination project is not a new water supply which could support growth and/or development in Santa Barbara. Refer to Responses 7-6 and 13-6 for more discussion.

COMMENTS ON THE DEIR FOR THE "TEMPORARY" EMERGENCY DESALINATION PLANT (TEDP).

The incomplete, inaccurate, and inadequate Draft Environmental Impact Report (DEIR) for an allegedly "Temporary" Emergency Desalination Plant in Santa Barbara requires analyses about and correction of the following errors and impacts:

1) The DEIR's Alternative Assessment section does not include discussion of the only viable short- and long-term solution to the water "shortage" and many other environmental, social, and economic disasters afflicting the South Coast and County = REDUCE the population of the grossly overpopulated, overcrowded, overdeveloped, overpolluted South Coast and hence REDUCE the water demand and obviate the "need" for a "temporary" or permanent desalination plant and/or other costly or growth-inducing water importation schemes.

The current water "shortage" developed mostly because stupid, greedy, crazy politicians, bureaucrats, developers (the list of culprits is long!) have imported too many people to overwhelm the available resources, particularly space, roads, water, housing. The carpetbaggers have destroyed the South Coast as a desirable place to live and have grossly degraded the Quality of

15-1 Life once enjoyed there by the pseudo-natives and few surviving natives.

Rather than robbing the taxpayers of billions of dollars to subsidize the further degradation of our Quality of Life through the importation of more people, more vehicles, more criminals, more water, more disasters, etc, it would no doubt be much cheaper to pay people to vacate the South Coast, County, and State, deport the carpetbagging vermin back where they came from, close down UCSB for the duration of the drought or permanently (to eliminate one major source of the South Coast's degradation over the past thirty years), and carry out other enlightened measures to achieve these goals (City Hall and DEIR scribes can add to the list).

The City and County have so far failed to control the carpetbaggers and breeders overrunning the South Coast! The time to begin is NOW! There are NO benefits to the Growth Mania! Only disasters result!

2) As the City Council has recently chosen to construct a long-term, permanent desalination plant, analyses of this proposal must be included in this EIR. Perhaps the "temporary" plant should

15-2 be constructed as part of a long-term plant or both at the same time. The DEIR does not discuss the possibility that the "temporary" plant might become "permanent," but denies this obvious sneaky scenario.

3) The "No Project" alternative does not discuss the long-term benefits of this scenario, but

15-3 only lists some possible "negative" results (7/23). Business failures, for example, could result in a lower population - a decided benefit!

15-4 4) The DEIR lacks discussion of the operating, standby, and removal costs and impacts and comparing same with "state" water, conservation, deportation, and other measures.

15-5 5) The DEIR lacks adequate discussion of the visual impacts and mitigation measures of this large and ugly plant/exterior lights, etc, upon the Rescue Mission (another City Hall disaster, mislocated in the wrong place!) and its no-account residents and travelers passing by upon an elevated Highway 101.

15-6 6) While the DEIR boldly claims that the plant will only be used to replace the water supply lost to the Drought Dancers and thus will not induce growth, it ignores the reality that conservation, etc, measures could result in providing water for more people in the City or, through the sale of water to other South Coast districts, more people elsewhere.

15-7 The project and DEIR does not discuss this issue nor the means to prohibit population increases and the sale of water to other districts.

More water ALWAYS means more people! That's the history of water in California and the reason why most of the State has become an overpopulated, uninhabitable World Class Disaster Area!

Submitted by:
Richard A. Stromme
Send Them Back!
P.O. Box 162, Santa Ynez, California 93460. Ph: 805-688-3145 20/1/91

Response 15-1: The commentor's suggestion that the alternatives analysis should include reduction of the existing population on the South Coast is not considered to be feasible, thus it is not considered further.

Response 15-2: Refer to Response 7-6.

Response 15-3: As stated in Section 7.3 of the EIR, the impacts associated with construction and operation of the proposed project, including the 8 MW energy demand, would not occur under the No Project Alternative. Business failures are not considered to be environmental impacts and as a matter of City policy are not encouraged.

Response 15-4: Refer to Response 4-1: State water, conservation, and/or deportation are not alternatives to the desalination project since none of these can meet the objectives of the proposed project.

Response 15-5: Comments noted. The visual assessment presented in the EIR is considered by the City to be complete.

Response 15-6: Refer to Section 7.4.4.2 of the EIR which discusses conservation and has been expanded since the DEIR was issued. Refer to Responses 17-83 through 17-89 for more information.

Response 15-7: Section 5.0 of the EIR assesses potential growth inducing impacts of the project. Assuming the proposed project is implemented, the City still predicts that its water supply will fall significantly short of demand until adequate rainfall and replenished supplies are available. As discussed in Section 5.0, water sales to other South Coast communities would also be limited to replacement of supplies lost due to the drought. Refer to Responses 7-6 and 13-6 for more information.

SANTA BARBARA CHAMBER OF COMMERCE

January 22, 1991

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CITY OF SANTA BARBARA
PLANNING DIVISION

Mayor Lodge and City Council Members
City of Santa Barbara
City Hall
De La Guerra Plaza
Santa Barbara, California 93101

RE: DEIR - Temporary Emergency Desalination Project

Dear Mayor Lodge and Council Members,

The Chamber of Commerce is pleased to present the following comments with respect to the subject DEIR.

16-1 In general, it is well known that a petition is presently circulating in Santa Barbara which would allow the proposed temporary facility to become a long-term water supply for the City. The California Environmental Quality Act requires that project EIRs discuss all impacts and base all analyses on a project's development as it may be expected to occur in the reasonably foreseeable future. That is, CEQA demands that the overall impacts of a project be analyzed, even if the entire project is not presently proposed. This requirement is especially important to this EIR given the knowledge that a desalination initiative is circulating which would allow a short-term, emergency project to become long-term. We strongly believe that in order for this EIR to be deemed adequate, the project description should be modified to describe a facility which will be a long-term water supply for the City. The potential impacts should be reassessed, and the DEIR redrafted as necessary and recirculated for public comment.

16-2 We believe the existing DEIR should be revised to address the following impacts which the Chamber believes have been inadequately studied:

1. **Regionalism.** The City's actions with respect to determining which water supply option it will choose has a dramatic effect upon the feasibility of regional solutions. The Santa Ynez Water Conservation District, in a letter to the City dated December 17, 1990, states that "the result (of Santa Barbara instituting a long-term desalination project) would be that the future water requirements of this area will have to come from the sources which will have the most adverse affect on all the other water

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Visitor Center: One Santa Barbara Street, Santa Barbara, CA 93101 • 805/965-3021
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16-2 users on the river..." The City of Santa Barbara, if it refuses to participate in regional alternatives, will indirectly cause significant adverse effects, both economically and environmentally, by virtue of other water agencies being forced to undertake new water supply alternatives which may have negative environmental effects and which are not preferred projects. The DEIR should include a section on regionalism which addresses indirect impacts caused by the City's unwillingness to participate in a regional alternative which is the cheapest and has the fewest environmental impacts.

16-3 2. **Water Quality.** We believe that the DEIR inadequately addresses the water quality impacts which may result from reverse osmosis treated water. Specifically, Table 3.7-3 indicates that the salt levels of desalinated water will be approximately double that of our existing water supplies. Although the DEIR states that these increased salt levels pose no health risk to humans, it is clearly undesirable to live with these impacts. If the desalination plant supplies the City with 7,500 AFY, approximately half of the City's water demand may be made up of higher-salt content water, suggesting that mixing existing low-salt content water with the proposed project's high-salt content water will not mitigate this undesirable impact.

16-4 Furthermore, the DEIR does not describe impacts which may occur to Santa Barbara's plant life when desalinated water is used for irrigation purposes. The earth is unlike the human body, it does not process salt but instead leaches it, and it remains in the topsoil. What impact will this have on significant species of trees, such as oaks, which are so much a part of Santa Barbara's unique character and which we try so hard to preserve through environmental review? Certainly the impact will not be immediate, but over time it may prove to be quite significant. The DEIR should be revised to include a section on impacts to plant life.

16-5 Finally, we understand that the higher salt content of desalinated water may have an impact on the City's existing reclaimed water supply. If reclaimed water is produced from waste waster containing a higher salt content due to the introduction of desalinated water, then it may cause the reclaimed water to suffer an even higher salt content than it presently contains. This potential impact should also be included in the above requested section on impacts to plant life.

3. **Air Quality.**

Section 2.4.6 of the DEIR states that the energy requirements for the
desalination plant will be approximately 2 megawatts and that Southern
California Edison presently has the infrastructure capacity to serve this
huge energy requirement. Section 3.11.2 discusses the air quality
impacts which will occur in locales which serve as the generation point
of the power for the proposed project. While Santa Barbara will not
suffer any air quality impacts, degradation of air quality will occur in
these other locations. The EIR states that since there is existing
capacity to produce this electricity, the impacts are insignificant. We
16-6 strongly believe that this deviates from standard methods of assessing
impact significance. The severity of impacts have never been based on
the capacity to generate the impact, but rather the level of impact itself.
We believe it would be irresponsible for Santa Barbara to ignore air
quality impacts which will occur in other parts of the State simply
because we will not suffer them locally. We believe a complete air
quality section should be added to the EIR, and that the emissions
should be studied not relative to the ability of existing power systems to
create the energy, but rather relative to the actual impact they will have
on the locales which suffer them.

4. Noise.

Section 3.5.2.3 discusses operational noise impacts which are of
concern to existing surrounding uses. In fact, the DEIR states that
16-7 noise levels expected from the desalination plant will exceed noise
element thresholds of the General Plan. Section 3.5.3 discusses
mitigation measures which will be incorporated into project design as
identified in Section 2.0 (Project Description), but no specific section
16-8 within that chapter summarizes the mitigation measures to be
incorporated. We believe that additional noise mitigation measures
should be undertaken. We believe the City should commit to heavy
planting around all sides of the facility with large shrubs and trees to
screen out the noise as well as reduce the visual impacts of the project
from the adjacent freeway. These plantings should be large at the time
they are installed so that adequate screening is provided at the outset of
16-9 the project. Also, the City should consider raising the height of the
existing wall between the subject site and the Rescue Mission as the
impacts to that facility are significant. The DEIR should be revised to
reflect these mitigation measures and should summarize all mitigation
measures in one section in the EIR.

5. **Economics.** The California Environmental Quality Act does not require that economic impacts be studied, and we appreciate your voluntarily including them in the DEIR. However, Section 6.0 is inadequate as a proper discussion of the economic impacts of the project. The City of Santa Barbara typically adopts a "worst case" scenario when analyzing environmental impacts; however, Section 6.3.2 bases a projection of future water bill rates on a production cost for desalinated water of $1,866 per acre foot, which is the "best case" cost and a deviation from standard environmental review methodology. Even if "best case" cost figures are utilized, however, the percentage increase of the cost of desalinated water over our current cost of water exceeds 1,100%. It is difficult to understand how such a large increase would only amount to a 6% increase in individual water bills. If desalinated water represented only a small portion of the City's water supply, then a 6%
16-10 increase in individual water bills would seem reasonable. However, the desalination plant may supply as much as <u>half</u> of the City's total water demand, and in that case, it would not seem reasonable that individual water bills would only increase 6%.

Energy costs may rise significantly in the future for other reasons as well. The DEIR should be revised to include a discussion of the sensitivity of the cost of desalinated water to energy prices.

Section 6.2 includes a short discussion of the costs of desalination versus tankering. We believe that the list should be expanded to include a list of the costs of all water supply options, so that desalination can be meaningfully compared to all alternatives.

6. **Energy.** Appendix F of the State CEQA Guidelines requires that energy conservation measures be employed in all projects having a significant impact on energy resources. Section 3.11 of the DEIR describes energy use, but states that the impacts are not significant since the electricity can be provided by existing capacity. We believe this is an inadequate assessment of potential impacts. For instance, the DEIR
16-11 provides no information about the project's energy consumption relative to the total remaining capacity of the existing system. If eight megawatts over a five year period represented 5% of the remaining capacity, that should certainly be considered a significant. If, on the other hand, the energy consumption represented 0.5% of the remaining capacity, perhaps the impact would be less than significant. Since the

16-11 State CEQA Guidelines require that energy conservation measures be studied and discussed in an EIR with a potentially significant energy impact, we believe the EIR is presently inadequate. The EIR should be revised to include a more meaningful discussion of the energy consumption impacts and possible ways of reducing inefficient energy consumption.

We appreciate the opportunity to comment on the DEIR. We look forward to reviewing the revised DEIR.

Sincerely,

PIER GHERINI, JR.,
President

STEVE CUSHMAN,
Executive Director

Response 16-1: The long-term desalination water supply petition which was circulated in Santa Barbara is not specific to the proposed temporary emergency 10,000 AFY RO desalination project. Refer to Response 7-6 for more information.

Response 16-2: Comments noted. The City has not instituted a long-term desalination project. Refer to Response 7-6. The short-term emergency desalination project has been designed to supply up to 5000 AFY of water to other neighboring communities in the South Coast region, therefore the City is not only participating in a regional project but it is taking the lead for securing an emergency water supply for the region. No other regional alternative for a temporary emergency supply which can be on line by early 1992 and with less environmental impacts has been proposed or identified.

Response 16-3: The EIR appropriately relies on State and Federal standards to determine the significance of health impacts of water quality constituents. Refer to Responses 7-1 and 7-4 for information on human health issues related to water quality. No significant effects are predicted.

Response 16-4: Refer to Response 7-2. Irrigation of oak trees is not typically necessary due to their drought resistant nature, thus significant effects are considered to be unlikely.

Response 16-5: Refer to Response 7-1.

Response 16-6: As discussed in Section 3.11 of the EIR, all of the SCE electrical generation facilities which will serve this project have been previously approved, permitted, and mitigated, including associated air quality permits, as applicable. According to SCE it is not possible to stipulate which specific power generating facilities within the SCE electrical grid will supply power to the proposed project thus it is not possible to assess project specific air quality impacts. The types of electrical generating facilities, including percent contribution to total system energy as well as annual air emissions which could theoretically be attributed to generation of 8 MW are included in Section 3.11 of the EIR. Refer to Response 12-1 for more information.

Response 16-7: The predicted exceedance of the City's Recommended Noise Level for Transient Lodging does not include consideration of noise reduction mitigation measures which will be implemented to reduce noise levels to acceptable levels. The noise mitigation measures presented in Section 3.5.3 (or other measures with equal or greater effectiveness) will be implemented, as necessary. In addition, noise mitigation monitoring will be performed to

assure project related noise impacts are limited to acceptable levels at the Rescue Mission, as described in Section 9.2.2 of the EIR.

Response 16-8: The reference to noise mitigation which has been built into the proposed project design refers to the insulated trailers at the desalination facility where the high pressure pumps will be located. This applicant-committed noise reduction measure is discussed in Section 2.4.1 of the EIR. There is no need to have a specific and redundant mitigation section in the project description portion of the EIR.

Response 16-9: Landscaping is not a recognized means of noise mitigation, however, the desalination plant perimeter will be landscaped on all sides except the west, and a stucco wall will be built on the south side along Yanonali Street as described in Section 2.4.1 of the EIR. Mitigation measures which are deemed necessary to reduce impacts associated with the project are summarized in the Table 2-1 (Summary Table).

Response 16-10: CEQA does not require that an EIR include an economic analysis. The increase in water costs associated with the "1100% increase" compares only three sources of water (Gibraltar, Cachuma, and groundwater wells) to desalination water. Currently the City is paying for much more expensive temporary water sources (e.g., emergency State water, bedrock wells) and is paying for bringing into service additional reclaimed water and groundwater wells. In addition, system costs have increased significantly due to safety and regulatory requirements such as Gibraltar Dam Strengthening and additional water quality controls. These increased costs are spread over lower water sales during the drought resulting in current average water rates of about $3.50 per hundred cubic feet (HCF) which equates to $1520/AF. Delivery of desalinated water would allow the base system costs to be spread over more water sales. The average residential water user is currently billed at a maximum rate of $3.50/HCF for up to 10 HCF per month. If the proposed desalination project is implemented, this rate will rise about 6 percent to $3.70/HCF ($1610/AF), or to $4.13/HCF ($1794/AF) if City water sales are only 13,000 AF.

Increases in the operating and maintenance costs of the desalination plant related to electricity are limited in the contract between Ionics and the City to no more than 75 percent of the Consumer Price Index regardless of changes in the cost of electricity, thus the cost of desalinated water will not be significantly affected by energy prices. The cost between desalinated water and tankered water is the only comparison presented in Section 6.2 because tankering is the only alternative that was determined to be potentially capable of meeting the project objective of being able to supply up to 10,000 AFY of water starting in early 1992. Comparisons to other options which are not capable of meeting the project's objectives would not be meaningful.

Response 16-11: Comments noted. Based on data provided by Southern California Edison (SCE) (Terrill, 1991), the 8 MW energy requirement of the proposed desalination project represents 0.0026 of the reserve capacity of 3084 MW which existed in the SCE grid on June 26, 1990. The energy conservation aspects of the project which are discussed in Section 3.11.3 of the EIR include design features, energy recovery turbines, and facilities for efficient power transfer. Refer to Responses 10-3 and 14-7 for more information.

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January 22, 1991

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CITY OF SANTA BARBARA
PLANNING DIVISION

Mitch Oshinsky, Principal Planner
City of Santa Barbara
630 Garden Street
Santa Barbara, CA 93101

Re: Draft EIR for City of Santa Barbara's and Ionics, Incorporated's Temporary Emergency Desalination Project

Dear Mr. Oshinsky,

Thank you for this opportunity to present comments on behalf of Network regarding the draft EIR for the City's proposed temporary desalination facility.

Although several of the issues identified in Network's scoping comments are addressed in the EIR, many concerns have not been adequately answered. Network's primary concerns regarding the DEIR relate to the project description, impacts analysis (particularly the discharge of liquid and solid byproduct, energy use, potential growth inducement, and long-term analysis), mitigation measures and enforcement, and alternatives analysis.

CHAPTER 2: PROJECT DESCRIPTION

(a) Scope of Project

17-1 The DEIR states that "[t]he City will not purchase water for the City's use under its contract with Ionics when other water supplies available to the City meet pre-1988 demand on a safe yield basis, including 100,000 AF storage in Lake Cachuma and replenishment/recovery of the City's groundwater basins." (DEIR at pages 2-3, 2-4.) Where in the contract are these qualifications stated? According to Section 13.2 of the contract, the City must purchase a minimum quantity of water for the first three years. In addition, the City must commit to purchasing a specific amount of water each year. (Section 13.2.1.) Where is the guarantee that the City will not purchase water if the above-stated criteria are met?

ORIGINAL

[Note: the project description contained in the Initial Study simply states that the project would produce up to 10,000 AFY of water for up to five years; it does not include any restrictions on the amount of water purchased.]

17-1 While Network wholeheartedly endorses the proposed conditions for purchase of the desalinated water, it is vitally important that the project description accurately reflect the City's purchasing obligations; otherwise, several analyses in the DEIR (particularly, the growth inducement analysis) are based on unrealistic and misleading assumptions. CEQA requires an analysis of the "worst case scenario;" if the contract permits the City to buy up to 10,000 AFY without restrictions, the EIR must analyze the impacts generated by such increase in water supplies. The EIR may then suggest that restrictive conditions be incorporated to mitigate project-related impacts.

(b) Project Size

The Notice of Preparation and Initial Study describe the proposed desalination facility as having a capacity of 2,500 - 10,000 AFY (Appendix C at page 5). The Ionics contract also refers to a plant capacity between 2,500 and 10,000 AFY. (See agreement at page 32.)

17-2 The EIR only addresses a facility capable of producing between 7,500 and 10,000 AFY. The report should also analyze a 2,500-AFY facility and a 5,000-AFY facility. Obviously, a smaller facility will generate lesser impacts. This is particularly important in the areas of energy use and impacts to visual, marine and biological resources.

The EIR states that the facility would provide up to 5,000 AFY for the City (page 2-2). However, the report does not state the basis for limiting the City's supplies to 5,000 AFY. The City's agreement with Ionics, which sets forth the terms of the project, simply requires Ionics to construct a facility capable of producing "not less than 2,500 and not more than 10,000 acre feet per year" (see agreement at page 32). While Network supports limiting the City's production and use of water, it must be clear whether such a limit is simply advisory or whether it is actually enforceable.

(c) Upgrade of City's Distribution System

17-3 One of the project components is the interconnection of treated freshwater to the City 's distribution system. (DEIR at page 2-21; Appendix C/Initial Study at page 11.) According to the DEIR, if the City approves a facility capable of producing in excess of 8,000 AFY, the City's distribution system must be "upgraded." (DEIR at page 2-21; Appendix A at page A-1.) Since the DEIR only examines a facility capable of producing between 7,500 and 10,000 AFY, it is quite likely that the upgrade would be necessary.

17-3 However, this component of the project is not discussed in the DEIR. (See Appendix A at page A-1.) CEQA requires that all components and phases of a project be addressed in a single EIR in order to avoid "piecemeal review." Bozung v. Local Agency Formation Comm. (1975) 13 Cal.3d 263, 118 Cal.Rptr. 249; Santiago County Water District v. County of Orange (1981) 118 Cal.App.3d 818, 173 Cal.Rptr. 602. Therefore, this EIR should be revised to include a full description of the upgrade requirements and impacts associated therewith.

(d) Final Project Activities

17-4 According to the DEIR, the project is planned to provide a temporary, five-year water supply. At the end of the five years, the City may require removal of the facility, may acquire ownership of the facility, or may extend the contract with Ionics. (DEIR at pages 2-2, 2-47 - 48.) The EIR should discuss the impacts associated with each of these scenarios. Although the DEIR does address extended use of the facility, the discussion is inadequate (see comments below). The DEIR should also analyze impacts associated with removal of the facility. In this discussion, the report should also identify which components will not be removed and the associated impacts.

(e) Presence of Sensitive Marine Resources

17-5 Page 2-13 (2.3.7): The DEIR states that "[n]o kelp beds or other environmentally sensitive marine resources have been identified in the immediate vicinity of the outfall discharge area." What about the Harbor Reef, One-Mile Reef and kelp beds near such reefs? The Initial Study states that these reefs are located "in the general vicinity of the southern end of the existing ocean wastewater outfall." (Appendix C at page 23.) In addition, kelp beds were present inshore of the intake site until the 1983-84 El Nino storms, and are expected to recover under normal circumstances.

(f) Brine Discharge

Page 2-20 (2.4.3.2): The DEIR should state the expected volume of effluent generated by the proposed project. According to section 2.4.5, the "average" brine discharge will be 13 MGD. What will the maximum discharge be?

17-6 Page 2-23 (2.4.5): As mentioned above, the DEIR discloses the average expected brine discharge, but not the maximum potential discharge.

The DEIR states that the outfall currently discharges an average of 6.5 MGD. This section should also disclose that the normal (pre-drought) discharge is 9 - 9.5 MGD (see page 3-31). Taking into consideration the normal discharge (9 - 9.5 MGD) plus the project-

17-6 related brine discharge (13 MGD), the volume of discharge will exceed permitted capacity by at least 11 MGD, or by 100%.

Page 2-43 (2.6.1.7): As mentioned above, the DEIR should use the "normal" waste water effluent figure of 9 - 9.5 MGD, rather than the current drought-impacted figure of 6.5 MGD.

(g) Solids Disposal

The DEIR states that waste solids will be disposed at an "approved disposal location." (Pages 2-38, 2-42.) See comments below regarding potential impacts associated with the generation, transportation, treatment, and disposal of the solid byproduct. The DEIR should provide sufficient information to determine whether the byproduct must be handled as hazardous waste.

17-7 The DEIR should identify the volume of construction material wastes.

The DEIR should also identify the total volume of solid waste to be generated during the operation of the plant, including not only filter backwash solids, but also filter cartridges, membranes, and cleaning residues.

The report should identify the intended disposal facility (whether Class I, II or III).

(h) Finished Water Quality

17-8 Table 2-9 should include a comparison to the constituent levels occurring in existing City water supplies.

See comments below regarding impacts to Human Health.

CHAPTER 3: ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

3.2 GEOLOGY AND SOILS

17-9 The proposed site is located on top of landfill, thus subjecting the site to liquefaction and related impacts. The DEIR states that the site poses low potential for liquefaction (DEIR at page 3-2); however, earlier soil reports indicate otherwise (see comments submitted by Stanley Mendes, structural engineer). The DEIR should address this discrepancy.

17-10 Page 3-11: The DEIR states that a geotechnical report will be prepared, which will include a soils report identifying liquefaction potential for the site. This report should be prepared as part of the EIR analysis to ensure that the decision-makers have an accurate assessment of liquefaction potential and to

17-10 ensure that all necessary mitigation measures (or consideration of alternative sites) are considered. CEQA does not allow deferment of environmental analysis. Sundstrom v. County of Mendocino (1988) 202 Cal.App.3d 296, 248 Cal.Rptr. 352. Without the soils report, it is impossible to determine the true nature of the problem or to know whether it is feasible to adequately mitigate all potential impacts. Thus, Mitigation Measure 3.2.-3 is inadequate.

It is important that impacts associated with liquefaction and other seismic activity not be understated. The result of such occurrences can lead to pipeline breakage and spills. Some of the project pipelines contain potentially hazardous chemicals (see pages 3-13, 3-14).

3.3 WATER RESOURCES

(a) Intake Impacts

17-11 The DEIR should discuss impacts to marine organisms resulting from intake pump noise (see Appendix C at page 25).

17-12 The intake is located in an area where boats may discharge waste water containing bacteria and viruses (see Appendix C at page 29). The DEIR should discuss impacts associated with potential contamination of the intake water and should recommend measures to avoid such contamination.

(b) Offshore Oil Spills

17-13 The DEIR should discuss potential impacts from offshore oil spills. If oil spills in the vicinity of the intake facilities and mixes with the incoming water supplies, how will the presence of oil impact the reverse osmosis membranes?

(c) Other

17-14 Page 3-24: The DEIR states that liquid waste originates from filter backwash, desalting reject (brine), and periodic cleaning or maintenance procedures. The DEIR should also mention that liquid waste will be generated during pickling procedures.

17-15 Page 3-24: See comments below regarding solid waste generation and disposal.

Page 3-33: Since the addition of the brine will more than double the normal amount of discharge, it is difficult to reconcile the conclusion in the DEIR that the increased discharge will not pose any significant impacts. In addition to the increased volume, the brine will also increase the density and flowrate of the effluent discharge (DEIR at page 3-31).

17-16 Page 3-33: The DEIR states that the RO process will cause insignificant changes in temperature of treated seawater. What is the reference and data to support this statement?

(d) Mitigation Measures

Page 3-35: The monitoring program as set forth in the DEIR is inadequate to accurately determine impacts to marine resources. The DEIR relies heavily upon the existing monitoring program required by the Regional Water Quality Control Board. However, RWQCB monitoring programs do not measure all parameters which
17-17 affect the marine environment. In addition, the monitoring program established by the RWQCB for the existing outfall requires bottom sediment sampling only once every three years, beginning in 1992; thus there would be at most only one sample taken during the life of the project. A minimum sampling effort of at least once a year (preferably in the late summer or early fall after a prolonged period of calm) is necessary to adequately describe the accumulation of metals in the sediments.

Mitigation Measure 3.3-5 states that the City shall consider adding salinity measurements to the offshore monitoring program and shall consider temporarily increasing the sampling frequency immediately following desalination plant start-up. As stated, this measure is
17-18 completely ineffective. The measure should be restated so that the City shall add salinity measurements and increase the sampling frequency. Sampling frequency should be increased for a period of time long enough to account for seasonal variations.

See attached comments prepared by Ecometrics. ("Attachment A," incorporated herein by reference.) One of the most important recommendations contained in the Ecometrics letter is the requirement for baseline studies as a means to ensure effective monitoring. Such baseline studies should provide information regarding the following parameters: salinity, seawater density, turbidity, dissolved oxygen, temperature, nutrient concentrations, heavy metal concentrations, pH levels, and abundance and diversity of biological species.

17-19

In addition, the monitoring requirements should require more sampling locations in and around the plume. Sampling away from the plume can also provide valuable information in that it provides the basis for a comparative analysis of the impacts associated with the intake and outfall.

Filter feeding organisms such as mussels should be used as biological indicators for monitoring the accumulation of metals in the outfall area.

17-19 Finally, the DEIR does not state the frequency at which temperature, salinity and density will be sampled; at a minimum, sampling should occur on a monthly basis.

3.4 BIOLOGICAL RESOURCES

(a) Impacts to Reefs and Kelp Beds

17-20 Pages 3-37, 38 (3.4.1.2): The DEIR should acknowledge that historic kelp beds have occurred inshore from the intake diffuser. Although these beds were destroyed during El Nino in 1983-4, under normal conditions they would be expected to recover. The DEIR should discuss whether the proposed project will impact the recovery ability of these kelp beds.

Page 3-44: See above comments regarding potential recovery of kelp beds.

(b) Field Survey

17-21 Page 3-40: A one-day SCUBA survey is insufficient to provide information regarding seasonal variations in populations of marine organisms.

(b) Laguna Channel

17-22 Page 3-43 (3.4.2.1): The Initial Study recommended suspending a pipeline over Laguna Channel to minimize impacts to biological resources (see Appendix C, page 23). The DEIR should discuss this option.

(c) Mitigation Measures

17-23 Page 3-47: Mitigation Measure 3.4-1 states that "If future offshore discharge monitoring results indicate a problem, corrective action shall be taken, as necessary." This measure is vague and unenforceable. Who will determine what action is required, or whether it is necessary?

3.5 NOISE

17-24 The DEIR should discuss noise impacts to beach-goers, particularly during construction activities.

3.6 RISK OF UPSET

17-25 As mentioned above, the DEIR should discuss the risk of offshore oil spills and the resulting impacts upon the proposed project.

17-26 It is unclear whether the occurrences considered in the DEIR include releases caused by seismic activity.

17-27 A thorough assessment of risks must include an analysis of both the frequency of the occurrence as well as the magnitude. The analysis in the DEIR is much too general and conclusionary.

17-28 Page 3-67 (3.6.3): The DEIR does not mention potential impacts to beach-goers.

17-29 Page 3-71: The DEIR states that a Risk Management Plan will be required. When will the Plan be prepared? Shouldn't the Plan be reviewed in the DEIR for adequacy?

3.7 HUMAN HEALTH

(a) Accidental Hazardous Chemical Spills/Releases

(1) Risk Analysis

17-30 As mentioned above, the risk analysis is superficial and does not provide sufficient information to assess impacts to human health and safety.

(2) Chlorine

17-31 See comments below regarding the possibility of avoiding chlorine use during disinfection. If the use of chlorine is reduced or avoided, the impacts associated with accidental releases would also be reduced or avoided.

(b) Finished Water Product

(1) Comparison to Existing Water Supplies

17-32 Page 3-74: The DEIR states that the desalinated water will contain higher levels of chloride, zinc, sodium and potassium than are contained in normal City water supplies. However, according to Table 3.7-1, the desalinated water will exceed existing water supplies in several other constituents as well (cadmium, chromium, lead, mercury, and silver).

(2) THM levels

17-33 THM's are carcinogenic and pose a severe threat to human health. They are formed as a result of interaction between various precursors (such as bromide, which is heavily abundant in ocean water) and chlorine. THM's are not filtered out by the RO membranes. The proposed project uses chlorine for disinfection

purposes, thereby leading to the production of THM's. Due to the health problems posed by THM's, the DEIR should examine alternative disinfecting technologies. For example, the DEIR should analyze use of ultraviolet light. [It should be noted that the Marin reverse osmosis desalination facility does not use chlorine to disinfect the Bay water.]

17-33 The EPA may revise THM standards in 1991 when the Disinfectant Byproducts Rule is reviewed. How feasible will it be to modify the proposed disinfectant technologies in the event the standards are revised (i.e. reduced)?

Page 3-74: The DEIR states that reverse osmosis removes virtually all of the THM precursors. However, THM's which are formed prior to filtration will not be removed.

(3) TDS levels

Although the predicted levels of Total Dissolved Solids (TDS) are within drinking water standards, they are still high. Second-pass RO should be analyzed in the DEIR as a means to improve the quality of the water.

17-34

Marin's RO desalination facility utilizes second-pass treatment. The results of their pilot testing establishes TDS levels of 200 - 400 ppm for single-pass RO versus 10 - 20 ppm for second-pass RO. The DEIR should analyze second-pass RO as an alternative/mitigation measure.

(4) Salt levels

Second-pass RO would also reduce the salt content of the drinking water. AWWA drinking water standards are 20 ppm for sodium and 100 ppm for chloride. According to Table 3.7-1, existing surface water supplies contain an average of 55 ppm of sodium, and groundwater supplies contain an average of 59 ppm. However, the desalinated
17-35 water will contain an estimated 111 - 150 ppm of sodium, much higher than existing water supplies and far exceeding AWWA standards. Existing surface water supplies contain an average of 30 ppm of chloride and groundwater supplies contain an average of 117 ppm. The desalinated water will is expected to contain between 163 and 230 ppm of chloride, again surpassing the levels for existing water supplies and far exceeding the AWWA drinking water standards.

3.8 VISUAL AESTHETICS

17-36 Page 3-82: The DEIR describes the view from 100 feet *above* the freeway. The report should also provide a depiction of the views from the ground and new freeway overpass near the site.

17-37 Page 3-88: The DEIR states that overhead utility lines will not create a significant impact. However, it should be noted that the City's LCP requires undergrounding of all utility lines, whether in industrial areas or not. Impacts associated with overhead utility lines should be considered significant.

Mitigation Measures:

(1) The DEIR should discuss undergrounding utilities as a possible mitigation measure. (Note: this suggestion is especially important if the facility is to be used on a permanent basis.)

(2) The DEIR should also disclose that reducing the size of the facility would result in less impacts to views.

3.9 RECREATION

17-38 Page 3-92: The DEIR should identify the size of the beach area which will be fenced off during excavation activities.

17-39 Page 3-93: The DEIR should point out that the intake area is currently used by marine vessels and for recreational boating (see DEIR at page 2-13). The report should clarify whether boat use will be restricted from any area around the intake structures.

17-40 The EIR should discuss impacts to fishing areas due to the physical presence of intake structures as well as potential contamination of fish. There are already fishing prohibitions due to effluent discharge from the waste water treatment plant; such prohibitions may be increased as the volume and nature of the effluent changes.

17-41 Page 3-93: Mitigation Measure 3.9-1 states that beach construction should occur during the off-season "if possible." For this mitigation measure to be effective, the window of construction should be set forth in mandatory language. If it is not feasible to impose a strict schedule, other mitigation measures should be considered.

3.10 CULTURAL RESOURCES

17-42 Page 3-98: Mitigation Measure 3.10-1 states that all contractors and construction personnel shall be "alerted to the cultural sensitivity of the area." What type of training will be offered to such personnel? Will trained monitors be required? It is unrealistic to expect construction workers to be knowledgeable in this area without specific qualifications, training or expertise.

3.11 ENERGY USE

The DEIR states that there will be no impacts regarding energy use because the City will procure energy for the facility from Southern California Edison, and there is sufficient capacity remaining in the existing grid system to accommodate the energy needed for this project. Just because the system is permitted to provide more energy does not mean that there will not be impacts associated with such use. An EIR is required to assess a project's impacts in relation to the existing physical setting, as well as in relation to approved or permitted plans. CEQA Guidelines Section 15125(c); Environmental Planning and Information Council v. County of El Dorado (1982) 131 Cal.App.3d 350, 182 Cal.Rptr. 317; City of
17-43 Carmel-by-the-Sea v. Board of Supervisors (1986) 183 Cal.App.3d 229, 227 Cal.Rptr. 899. Even though SCE has permits allowing the sale of additional power to the City, the sale and use of this energy source will nevertheless create impacts to the environment.

Air pollution is not the only impact associated with increased energy use; production of energy from nuclear power, coal, and oil have numerous other devastating impacts on the environment and human health.

Mitigation Measures: The DEIR should point out that a smaller facility would require less energy and would therefore generate fewer environmental impacts.

OTHER IMPACT AREAS

The DEIR fails to sufficiently address the following impact areas:

SOLID WASTE DISPOSAL

(a) Hazardous Constituents

The DEIR does not adequately address the issue of solid waste disposal. The DEIR merely states that solids will be trucked to an appropriate solid waste disposal facility (pages 2-42, 3-24). At page 3-24, the DEIR makes the assumption that "none of the normal operation or maintenance streams are expected to be considered hazardous materials." However, there is no information upon which to base this assumption.

17-44

The DEIR should provide *empirical evidence* regarding the composition of the waste so that it may be determined whether the material will be hazardous. Information regarding constituent concentrations in sea water or ocean sediment alone is not a valid depiction of the concentrations which will be produced as solid byproduct. The DEIR must include an analysis of the solid material which will actually be generated. The analysis should indicate

17-44 whether the material is hazardous pursuant to Title 22, California Code of Regulations, Div. 4, Chapter 30, Article 11. In analyzing the nature of the waste, both acute and chronic toxicity should be considered.

17-45 The DEIR assumes that the waste can be disposed at Tajiguas, a Class III landfill. However, if the waste material is considered hazardous, it cannot be disposed at a Class III landfill and may have to be treated prior to disposal. The treatment, transportation and disposal of hazardous material is extremely costly. In addition, the transportation and disposal of such material poses serious environmental concerns.

(b) Mitigation Measures

17-46 The DEIR should provide more information regarding the recycling potential of the solid wastes. The document should also suggest specific requirements regarding such recycling possibilities.

TRAFFIC

17-47 Onshore: A facility sized to produce 10,000 AFY would require the closure of the Salsipuedes off-ramp. (See Appendix C, page 28.) This closure would adversely impact traffic and circulation patterns, as well as adversely affect businesses in the area.

17-48 Offshore: The DEIR should provide more information regarding the restriction on marine vessel traffic in the vicinity of the intake area.

FINISHED WATER QUALITY

17-49 The DEIR discusses the quality of the water as it pertains to drinking water standards. The DEIR should also discuss the use of the product water for other uses, such as watering of plants and landscaping. The high concentrations of chloride and sodium in the product water will adversely impact vegetation.

17-50 The DEIR should also discuss whether the water will have an impact on the quality of reclaimed water produced by the City.

COMMERCIAL FISHING

17-51 The area in the vicinity of the diffuser is currently off limits for shellfish harvesting and commercial fishing due to the discharge of secondary treated effluent. The volume of discharged effluent will *more than double* with the operation of the proposed desalination facility. (See discussion above regarding brine

17-51 discharge information; DEIR at pages 2-20, 2-23.) Will the restricted area be increased due to the increased volume of discharged effluent?

CHAPTER 4: CUMULATIVE IMPACTS

17-52 Pages 4-2, 3: The only cumulative impacts addressed in the DEIR are air quality and transportation, with air quality being tied to transportation. The DEIR fails to address cumulative impacts concerning any other impact area. A grave omission is the failure to consider cumulative energy use impacts (and related air quality impacts) and cumulative impacts to marine and biological resources.

4.3 ASSESSMENT OF POSSIBLE PROJECT EXTENSION

17-53 The discussion of the long-term use of the facility is welcome, but cursory at best. Some of the impacts areas are glossed over; others are not accurately analyzed.

It is well known that the City plans to provide desalted water on a permanent basis. On December 18, 1990, after spending several weeks addressing potential long-term water supply options, the City Council chose seawater desalination as the preferred permanent water supply. One of the factors which played a role in this decision was the fact that the conversion of the temporary desalination facility would be less costly than other alternatives. Given this decision, it is imperative that the EIR for the "temporary" project examine long-term use of the facility. (See City of Santee v. County of San Diego.)

(a) Visual Resources

17-54 The DEIR states that overhead utilities are inconsistent with the City's Local Coastal Plan Policy 9.3 regarding Visual Quality. (See page 3-107.) The DEIR states that this inconsistency may be insignificant due to the temporary nature of the project. In the discussion of the long-term impacts to visual resources, the EIR should disclose that there will be significant impacts associated with the long-term presence of above-ground utilities.

(b) Energy Use

17-55 In addition, the DEIR states that impacts to energy use will be insignificant because there is sufficient capacity within the SCE grid "*over the five year project life* without adding any new generating sources." (See page 3-100, emphasis added.) The Initial Study also stated that the project "would not be considered to result in a substantial depletion of nonrenewable natural fuel resources, given that Southern California Edison has sufficient

17-55 electrical capacity available, *and the project is temporary.*" (Appendix C, page 26, emphasis added.) In the analysis of long-term use of the facility, the DEIR should address project and cumulative long-term energy demands and availability of long-term supplies.

(c) Human Health

17-56 Even if the levels of sodium, chloride, and TDS in the final drinking water may not pose significant health impacts if the facility is used to produce drinking water on a short-term basis (not that Network agrees with this assumption), impacts will surely be significant in the long-term.

(d) Growth Inducement

17-57 The DEIR states that growth inducement impacts will be insignificant due to the temporary, emergency nature of the project (see comments below). However, the DEIR should address the potential growth inducing impacts associated with long-term use of the facility.

CHAPTER 5: GROWTH INDUCEMENT

(a) Assumptions

17-58 The DEIR operates on the assumption that the desalinated water will only be used under specific circumstances, and that the facility will be turned off if the City's traditional water supplies are available at adequate levels (when storage at Lake Cachuma is 100,00 acre-feet and groundwater basins are replenished). Although Network supports this policy, the organization is concerned that these restrictions may be no more than assumptions. CEQA requires that an EIR examine the "worst case scenario;" since the project description in the Ionics Agreement and Notice of Preparation/Initial Study does not include any restrictions on the use of the water, it is improper for the DEIR to disregard the potential growth-inducing impacts of the project.

17-59 The DEIR should justify the assumptions that (1) the facility will be turned off as described above; and (2) the City will only use up to 5,000 of the potential 10,000 AFY produced at the facility. [Note: the Initial Study states that "the City is considering the development of a temporary emergency project to augment *its* water supply by up to 10,000 acre-feet per year (AFY) for up to five years." (Appendix C, Initial Study at page 1, emphasis added.)]

17-60 In the alternative, the DEIR should assume that the full 10,000 AFY will be available for use by the City for the full five years (and

possibly beyond), and should analyze the "worst case scenario" as required by CEQA. The previously mentioned restrictions on water
17-60 production could then be incorporated into the report as mitigation measures to reduce growth-inducing impacts.

(b) Other Growth-Limiting Factors

Page 5-2: City Charter Sections 1507 and 1508 may not protect the City against growth inducement. Section 1507 requires the City to
17-61 live within its physical and natural resources, including water. If the City increases its water supplies, it has also increased its ability to grow. Section 1508 only applies to nonresidential growth.

(c) Long-Term Growth Inducement

17-62 See comments above regarding impacts associated with long-term use of the facility.

(d) Other Jurisdictions

If the City intends to sell water to other jurisdictions (which, if the facility is sized to produce 10,000 AFY and the City proposes to use up to 5,000 AFY would result in 5,000 AFY being available for sale to other water districts and purveyors), the result may lead to further growth in those areas. The City cannot impose
17-63 growth restrictions or condition water use in those jurisdictions. The EIR should identify the amount of water which may be available for sale to surrounding communities and analyze the potential for growth inducement in those communities as a result of purchase of such water.

CHAPTER 6: ECONOMIC ANALYSIS

Page 6-1: The DEIR provides the base cost for water produced at the rate of 10,000 AFY. The report should also include the cost of producing water at the rates of 2,500, 5,000 and 10,000 AFY.

Over what period of time is the cost amortized?

17-64 How would these costs be modified if the facility is turned off during periods when the water is not needed?

Do the estimated future rates depend upon sales to other jurisdictions?

CHAPTER 7: ALTERNATIVE ASSESSMENT

17-65 The alternatives analysis, or lack thereof, causes the most

17-65 concern. An EIR is intended to be an objective informational document, not a decision-making document. The report should provide sufficient information to apprise the public and decision-makers of the potential environmental impacts of a project, and to analyze measures and alternatives capable of reducing such impacts. An EIR should provide sufficient information about alternatives so that the decision-makers can effectively compare the negative and beneficial impacts of the various options and choose the best solution. This EIR does not provide any meaningful information about alternatives. The City, then, can only make one decision: to approve the project as proposed.

Alternative Sizes

17-66 As mentioned above, the project as described in the Initial Study and Ionics Agreement is the construction of a facility capable of producing *between 2,500 and 10,000 AFY.* The DEIR only examines a facility which produces between 7,500 and 10,000 AFY. The report should examine project sizes within the full range of the project description, including facilities sized to produce 2,500 and 5,000 AFY. A smaller facility would be environmentally superior in that it would require less energy, avoid impacts associated with the upgrade of the City's distribution system, create less liquid and solid byproduct, require less storage of hazardous materials at the site, and create a smaller visual intrusion.

Alternative Desalination Technologies

17-67 (1) Second-Pass RO

The DEIR fails to mention the possibility of constructing a second-pass reverse osmosis facility. As mentioned above, adding a second pass will create better quality water. (Note: the reverse osmosis facility under consideration in Marin includes a second pass.)

17-68 (2) Distillation Desalination

The discussion regarding distillation desalination is woefully inadequate. Only half a page is devoted to this discussion. While it is true that distillation would require more energy than reverse osmosis, it would also require far fewer chemicals, generate less hazardous liquid and solid byproduct, and produce much better finished water.

The reason CEQA requires an analysis of project alternatives is to give the public and decision-makers sufficient information to make an informed comparison between various options and their associated impact upon the environment, with the result that the alternative with the fewest environmental impacts can be identified. The current draft EIR fails to provide the information necessary for the City to make a reasoned decision.

The analysis of each alternative should analyze the alternative for
<u>each</u> impact area, describing the nature and scope of the impact and
17-69 comparing the degree of the impact to that which would be generated
by the proposed project.

At the public hearing on January 15, staff pointed out that the
distillation option is discussed in Appendix D (City Council Agenda
Report dated August 3, 1990: Selection of a Preferred Alternative
Water Supply Project). First of all, the information contained in
17-70 Appendix D is only a preliminary assessment used to select a
proposed project; it was not meant to substitute for full
environmental review. That information was to be elicited during
the preparation of the EIR.

Second, the analysis in Appendix D is premised on the assumption
that the intake structure for the distillation facility would be
located on Stearns Wharf. As with the Ionics plant, the intake for
17-71 a distillation facility can be moved from the wharf to the old
outfall. (Note: the original Ionics proposal also located the
intake on Stearns Wharf.) Thus, the analysis in Appendix D does
not provide a fair basis for comparison.

Third, EIR appendices should not be used as replacements for
discussion within the main body of the report. Appendices are
intended to contain technical *supporting* data, not the discussions
17-72 themselves. The discussion of alternatives should be incorporated
within the main body of the document to ensure fair consideration
and easily accessible information for the public and the decision-
makers.

Thus, the DEIR should be revised to include a thorough description
17-73 of a distillation facility and a complete discussion of the
expected impacts for each impact area addressed in Chapter 3.

(3) <u>Alternative treatment and disinfectant technologies</u>.

As mentioned above, the DEIR should analyze the availability and
17-74 feasibility of using disinfectant and treatment technologies which
do not involve such high chemical (particularly chlorine) use.
(Note: the Marin facility avoids the use of chlorination to
disinfect intake water.)

<u>Alternative Temporary Emergency Water Supplies</u>

(1) <u>Tankering</u>

The discussion regarding tankering, like the discussion regarding
17-75 distillation desalination, should include an assessment of each
impact area addressed in Chapter 3 to provide a meaningful
opportunity for comparison between the tankering alternative and

17-75 the proposed project.

(2) Waste Water Reclamation

See above comments regarding tankering.

17-76 The City has approximately 4,000 AFY of reclaimed waste water that is not earmarked for usage. The discussion regarding reclamation should explore the full potential expansion of reclaimed water deliveries within the City.

17-77 (a) The DEIR should discuss the potential for using natural perculation to recharge overdrafted groundwater basins.

17-78 (b) The DEIR should address the possibility of developing a Phase III distribution system to utilize reclaimed water in the upper Santa Barbara area.

17-79 (c) The DEIR should analyze the use of tertiary-level treatment of reclaimed water.

17-80 (d) The DEIR should analyze the use of reclaimed waste water as the feedwater for the proposed reverse osmosis facility in lieu of seawater. Treating the higher quality reclaimed water would be much less energy intensive and less costly than using seawater.

17-81 (e) Finally, the report should consider the potential reinjection of reclaimed water to inhibit seawater intrusion. Orange County has been aggressive and successful in this area.

17-82 Page 7-21: The DEIR states that the possibility of injecting reclaimed water to recharge the groundwater basins is infeasible. However, the DEIR should discuss Orange County's use of reclaimed water to act as a "saltwater buffer" in groundwater basins.

(3) Conservation

17-83 Page 7-20: The DEIR refers to "significant losses of property, business failures, potential threats to public health and safety." These claims are undocumented, unresearched and unquantified and therefore are inappropriate for inclusion in an analytical report such as an EIR.

17-84 Page 7-20: Network takes exception to the statement in the DEIR that the City "has done essentially all that can be done in the short term to encourage conservation." In fact, there is much more

17-84 that the City can do to promote conservation. The discussion of conservation options is severely lacking. The DEIR should discuss the many opportunities outlined in the City's own report (Chapter 5 of the City's long-term water analysis, dated November 9, 1990). The DEIR should analyze the full potential of conservation technology and identify the total amount of water savings which would be possible under maximum use of conservation.

In addition to the general comments set forth herein, the DEIR should consider the attached report entitled "Efficiency Technology," prepared by Peter Schillke, which addresses retrofitting of toilets and shower heads, conversion to drip irrigation, and increasing use of gray water in single family residences. (See "Attachment B," incorporated herein by reference.)

17-86 In general, the potential exists for major expansion of the City's retrofit program. The City has not exercised its authority to mandate retrofitting of properties at the time of sale to low flow toilets, low flow showerheads, and water efficient landscape methods (i.e. drip irrigation). Nor has the City exercised its authority to require commercial, industrial or other public establishments to do the same where applicable.

17-87 The City has used inappropriately high numbers in its cost projections for toilet retrofits. (See Schillke report.)

17-88 The City's conservation goals are shockingly unambitious. The City has set a 20-year goal to reach a 10% reduction in water consumption incremented uniformly over the 20 years, for *an annual reduction of one-half of one percent (0.5%)*. Instead, the City should commit to a 10% reduction over the next few years. Such a conservation effort is feasible. The City of Tucson, Arizona is reported to have accomplished a *20% reduction* in consumption with its low flow toilet program, drought tolerant turf program and education programs -- twice that of Santa Barbara's goal and in a short period of time.

17-89 The City does not provide individual water consumption data or goals to water users who are not direct rate payers. Approximately 60% of Santa Barbara residents are renters. The vast majority of these residents do not receive water consumption data for their dwelling units; nor do they receive data on the multi-unit meter to which they are connected. Furthermore, the City has neglected to mail or otherwise deliver water efficiency or conservation information to these residents. Therefore, an estimated 50% of the City's residents receive neither the personal consumption data nor the benefit of conservation tips that are commonly provided to homeowners and ratepayers.

17-89 Thus, the DEIR should be revised to provide a more accurate assessment of the potential for increased water conservation and efficiency in the City of Santa Barbara.

Environmentally Superior Alternative

17-90 CEQA requires that an EIR identify the environmentally superior alternative. There is not enough information in the current DEIR to make that determination. The *only* alternative for which the City has sufficient information to make a decision is a single-pass reverse osmosis desalination facility. Without a complete analysis of each alternative, the DEIR's conclusion on page 7-24 is unsupported by evidence.

17-91 The DEIR grossly underplays the potential for utilizing efficiency, conservation and waste water reclamation as means of reducing water demand and thereby reducing the need for production of new water supplies. The DEIR should be revised to provide adequate consideration of these environmentally superior alternatives.

17-92 Even within the parameters of a reverse osmosis facility, there are environmentally superior alternatives. As mentioned above, a smaller facility would impose fewer adverse environmental impacts and thus be environmentally superior to the 7,500 and 10,000 AFY projects described in the DEIR. In addition, a disinfection system which avoids the use of chlorine would be less environmentally intrusive. Incorporating second-pass filtration would be environmentally superior.

17-93 In evaluating the superiority of the various alternatives, the DEIR should consider the long-term viability of each alternative. In this respect, the DEIR should point out that reverse osmosis membranes must be replaced every few years.

Cost Comparison

17-94 The DEIR should also compare the cost of the various alternatives, including the cost amortized over the life of a "temporary" five-year project as well as the cost amortized over the life of a permanent (i.e. 20 - 30 years) project.

Combination Alternative

17-95 The DEIR should explore the alternative of combining two or more water supply options (i.e. desalination, increased conservation, and increased waste water reclamation). By utilizing this approach, the desalination facility could be reduced in size, thus eliminating or reducing some of the project's impacts.

CHAPTER 8: UNAVOIDABLE SIGNIFICANT ADVERSE EFFECTS

Page 8-1: The DEIR states that potentially significant effects are
17-96 predicted for noise, visual resources, and risk of upset/human
health. As discussed above, the report should also consider energy
use, solid waste disposal, and impacts to water and biological
resources as potentially significant.

CHAPTER 9: MITIGATION MONITORING

Pages 9-1, 2 (Section 9.2): The DEIR fails to require monitoring
of impacts to offshore marine resources. It was mentioned at the
17-97 January 15 public hearing that the RWQCB will include monitoring
and reporting requirements in the discharge (NPDES) permit. These
requirements should be outlined in the DEIR. In addition, the DEIR
should suggest additional requirements as mentioned above.

CONCLUSION

The DEIR must provide a more thorough analysis of the project's
impacts and a more objective presentation and comparison of project
17-98 alternatives. Given the inadequate discussion contained in the
report, it is the EIR, not the facts, which makes alternatives
infeasible.

Thank you again for your consideration of these comments.

Sincerely,

Linda Krop
Staff Attorney

Attachments: Letter from Ecometrics
Efficiency Technology (Schillke)

cc: Network (with attachments)
ERC (with attachments)
City Council (with attachments)

ECOMETRICS
2270 Camino Vida Roble, Suite L
Carlsbad, California 92009
(619) 438-5953

January 19, 1991

Ms Linda Krop, Staff Attorney
Environmental Defense Center
906 Garden Street, Suite 2
Santa Barbara, CA 93101

Dear Linda,

17-99 As you requested, we read the "Draft Environmental Impact Report for the City of Santa Barbara's and Ionics, Incorporated's Temporary Emergency Desalination Project" dated December 20, 1990. We have focused our attention on the likely effects of the project on marine water quality, nearshore currents, and marine organisms. We expected that the EIR would not only identify possible impacts, but would make quantitative estimates of those impacts where possible. This probably could not be done with useful accuracy for marine organisms, but should be possible for water quality and currents. Such estimates were not presented in the EIR. In addition, we expected that the EIR would recommend procedures for objectively determining whether the desalination procedure actually impacts water quality and marine organisms, should the project be approved and operation begin. It does not do so.

<u>Impacts on Water Quality</u>

The EIR concludes that there will be no "...unavoidable significant effects to oceanography and/or marine water quality..." From our experience studying the effects of the cooling system for the San Onofre Nuclear Generating Station, we think that the effect of the desalination plant on coastal currents will be small (about 0.5 cm/sec) and local. It also seems unlikely that the proposed project will have significant effects on upper water column turbidity, or water temperature. However, it is not as clear that the effect of increased salinity, concentrated metals, and discharged chemical wastes will be entirely benign. Although the data in Tables 3.3.1 - 3.3.6 show that the parameters are within the El Estero waste discharge limitations, it should be pointed out that the brine discharge will increase the concentrations of metals two to ten fold. To assess the significance of this, one needs to have information on initial dilution and the behavior of the plume. If there is no change in the initial dilution, there may be no adverse effect. The EIR refers to a preliminary modelling study conducted by the Regional Water Quality Control Board that indicates the brine discharge

Attachment "A"

"...is not expected to affect the dilution of wastewater...." The model was not described and no data was presented, so the result cannot be evaluated. However, it should be pointed out that the current waste water plume is freshwater and bouyant. The proposed combined waste water and brine plume will generally be denser than the receiving waters, about twice as dense during the night. Such a plume should remain very near the bottom. Offhand, one would expect the relative density of the effluent plume to effect dilution and perhaps sedimentation. If the dilution rate of the brine plume is lower and sedimentation is higher, there may be a greater accumulation of discharged materials in local sediments. Thus, the two types of plumes might also have different effects on local benthic organisms. This potential problem should be discussed in the EIR and, as with all important issues, enough data should be presented to allow independent evaluation of the conclusions of the EIR.

The EIR pointed out the possibility that the diluted sewage water might reach the intake but minimized the potential effects. We think this is a concern that should receive more attention. We suggest that current measurements be examined to identify circulation patterns and determine whether there are any stationary eddies in the area. Also, if they are available, continuous temperature measurements from a thermistor chain should be examined to identify thermoclines and internal waves. If appropriate data are not available, perhaps such studies should be contemplated. If physical data or data from water samples are available, they should be presented in the EIR.

17-99

The EIR did not discuss the effect of the increased volume of the discharge on the far field dilution. This should be considered.

The monitoring studies that are outlined in the EIR appear to be designed to study the plume and estimate dilution. However, they are not well defined in the EIR. It is important to note that the combined plume will not reach the surface. Therefore, the dye will not be visible from the air but will have to be identified by fluorometry. Also, it is important to verify that the droques at the surface are tracking the submerged plume. No mention is made of continous studies of coastal currents and their vertical distribution. However, if such studies have not been done, they may be necessary to identify local circulation patterns and stationary eddies.

Impacts on Biological Resources

The EIR identifies several local habitats that could potentially be affected by the desalination facility. These include sand bottom, three rocky reefs, kelp forests, and fisheries. The discharge structure is surrounded by sand flats, the reefs are within a one mile radius, and the nearest kelp forest is about one mile distant. However, most of the area surrounding the outfall is suitable habitat for giant kelp and kelp forests grew nearby prior to severe storms in 1983. In addition, there are aquaculture leases beginning about 1.5 miles west of the discharge site. These were not mentioned in the EIR but should be considered because some cultured animals such as mussels have

the ability to concentrate toxins. According to Santa Barbara fishermen, the person at California Fish and Game who is in charge of the leaseholds is Mr. Rob Collins (916 324-9676). He probably knows what animals are being cultured and where, and should be consulted.

In order to estimate potential impacts of the brine discharge on marine organisms, one needs a good physical model of the fate of the discharged materials. Even then prediction is difficult. Thus a good monitoring program is important. The monitoring programs reviewed in the EIR are not adequate to determine if the combined effluent affects organisms in the habitats identified. In the EIR there was not even a single useable estimate of density for any local population and there was no description of any studies that have been conducted to determine whether the existing outfall is affects populations of benthic invertebrates. Nor does
17-99 the EIR recommend a monitoring program. This should be remedied. At the least, one would like to have replicate stations inside the zone of initial dilution and at locations near and far from the outfall outside of the zone of initial dilution. Since currents apparently travel upcoast and downcoast in roughly equal proportions, one should have stations on both sides of the discharge. We strongly recommend that any proposed monitoring program be initiated before the desalination facility begins operating. Without "Before" data at both impact and control sites, inferences from monitoring studies are unnecessarily weak.

Finally, the EIR should provide a quantitative estimate of entrainment losses for plankton and fish larvae. This could probably be done with existing data and would give reviewers a sense of the magnitude of the effect.

We hope this is helpful to you.

Sincerely,

John D. Dixon

John D. Dixon, Ph.D.

Stephen Schroeter

Stephen C. Schroeter, Ph.D.

Hany Elwany

Hany Elwany, Ph.D.

17-100

EFFICIENCY TECHNOLOGY

Preferred Emergency and Long Term Water Supply
for the
City of Santa Barbara

Prepared by Peter Schillke
522 De La Vista Avenue
Santa Barbara CA 93103

for additional information or comment
965-5845

Attachment "B"

WATER EFFICIENCY - The Better New Source

AVAILABLE, CHEAPER, CLEAN, PERMANENT

SHOWER HEAD CONVERSION SUMMARY:
* $93 per acre foot (5 yr amortization)
* 767 acre feet/yr contribution
* 100 % online within 90 days possible
* Permanent solution
* No ongoing energy dependancy

TOILET CONVERSION SUMMARY:
* $520 per acre foot (20 yr amortization)
* 1076 acre feet/yr conversion dividend
* 100% on line within 1 year possible.
* Permanent solution.
* No ongoing energy dependancy
* 40% capital outlay returned to local economy

DRIP IRRIGATION CONVERSION SUMMARY:
* $473 per acre foot (10 year amortization)
* 1600 acre feet/year conversion dividend
* 100% online possible within 1 year
* Permanent solution
* No ongoing energy dependency
* 46% capital outlay returned to local economy

17-100 SINGLE FAMILY RESIDENCE GRAY WATER SYSTEM SUMMARY
* $1047 per acre foot (10 year amortization)
* 268 acre foot recovery dividend
* 100% online within 1 year possible
* Minimal ongoing energy dependancy
* Permanent solution

RECLAIMED WATER PERCOLATION UTILIZATION:
* $ - ????
* 1500 acre feet (1000 AF parklands, 500 AF -Mission Creek)
  (3900 acre foot unused in current City 90-93 scenerio)

SOURCE	AC FT	$/PER	$ TOTAL
Shower head conv	767	93	71,331
Low flow toilet	1076	520	559,520
Drip systems	1600	473	756,800
On site gray wat	268	1047	280,596
TOTAL ACRE FEET/YEAR =	3711	FOR	1,668,247

* AVERAGE COST PER ACRE FOOT = $450 *

17-100

SHOWER HEAD CONVERSION ANALYSIS

An estimated 35,000 shower heads are yet to be converted to 2 gpm types.

Pre-conversion shower heads consume an average of 4 gpm (city published estimate)

Shower duration during "normal" years = 8 minutes (city published estimate)

Therefore, 2 gpm per shower is the conversion dividend.

75,000 people x 4 showers/wk x 52 wks x 8 min x 2 gpm conv dividend
= 249.6 million gallons
= 33.3 million cubic feet
= 767 acre feet per year

At $10 per head, capital conversion cost = $350,000

Amortizing the costs fully the first year
$350,000 divided by 767 acre feet
= $93 per acre foot
= $0 per acre foot after the first year

or if you prefer, amortizing the investment over 5 years
= $93 per acre foot.

TOILET CONVERSION ANALYSIS

There is an estimated 90,000 toilets in the city of Santa Barbara.

Aproximately 10,000 toilets that have been converted to low-flow toilets. (rated 1.6 gallons per flush or less)

Aproximately 80,000 toilets are yet to be converted.

The unconverted toilets consume anywhere from 3-7 gallons per flush.

A conservative estimate of average "normal" flow toilet water usage per flush is 4 gallons per flush.

The savings per flush for conversion is 2.4 gallons.

An average occupancy of 80,000 is assumed which includes tourist and workplace/home averaging.

The average person in "normal" years is likely to flush a toilet at least 5 times per day.

Water efficiency gains would therefore be:
17-100 80,000 persons x 5 flushes x 2.6 gals less usage x 365 days/yr
= 350.4 million gallons per year
= 46.8 million cubic feet per year
= 1076 acre feet per year.

The average cost per conversion is estimated at $100 for hardware and $40 for installation labor for a total installed cost of $140.

Cost of conversion would therefore be:

80.000 toilets x $140 = $11.2 million capital investment with an estimated life of 20 years.

Amortized over 20 years = $560,000 per year capital cost

divided by 1076 acre feet per year dividend
= $520 per acre foot "new" water cost

Local bonus benefits:
1. 50% of capital investment immediately returned to local economy.
2. No public land use required for production equipment.
3. No ongoing energy costs/pollution/dependancy.

Global benefits:
1. No ongoing pollution contribution to the environment.
2. Reduction of "hostage" environment caused by energy dependancy.

DRIP IRRIGATION CONVERSION ANALYSIS

Drip irrigation systems are claimed to reduce water consumption up to 70% in maintaining trees, shrubs and gardens while improving health of plants. This analysis instead uses a conservative estimate of 40% reduction.

Assumptions:
"Normal" year landscape consumption = 8,000 acre feet
Grass only = 4,000 acre feet (excluded from drip analysis)
Tree/shrub/garden = 4,000 acre feet

27,000 water meters = 27,000 landscape units.

40% efficiency improvement x 4,000 acre feet = 1600 acre feet dividend.

17-100

Hardware

27,000 Installations x $200 hardware	= $5,400,000
27,000 installations x 4 hours x $20/hr labor	= $2,160,000
	= $7,560,000

amortized over 10 years = $756,000 per year
divided by 1600 acre feet= $473 per acre foot

Local bonus benefits:
1. 46% of capital investment immediately returned to local economy.
2. No public land use required for production equipment.
3. No ongoing energy costs/pollution/dependancy.

Global benefits:
1. No ongoing pollution contribution to the environment.
2. Reduction of "hostage" environment caused by energy dependancy.

GRAY WATER SYSTEM ANALYSIS: Laundry to lawn

A conservative assumption is made here that only the 17,500 single family residences are candidates for on-site generated gray water usage. An additional assumption is made that only 80% of those laundry hookups are conveniently located to lawn areas. Therefore:

17,500 x 80% = 14,000 systems potential

Weekly average laundry loads per system = 3

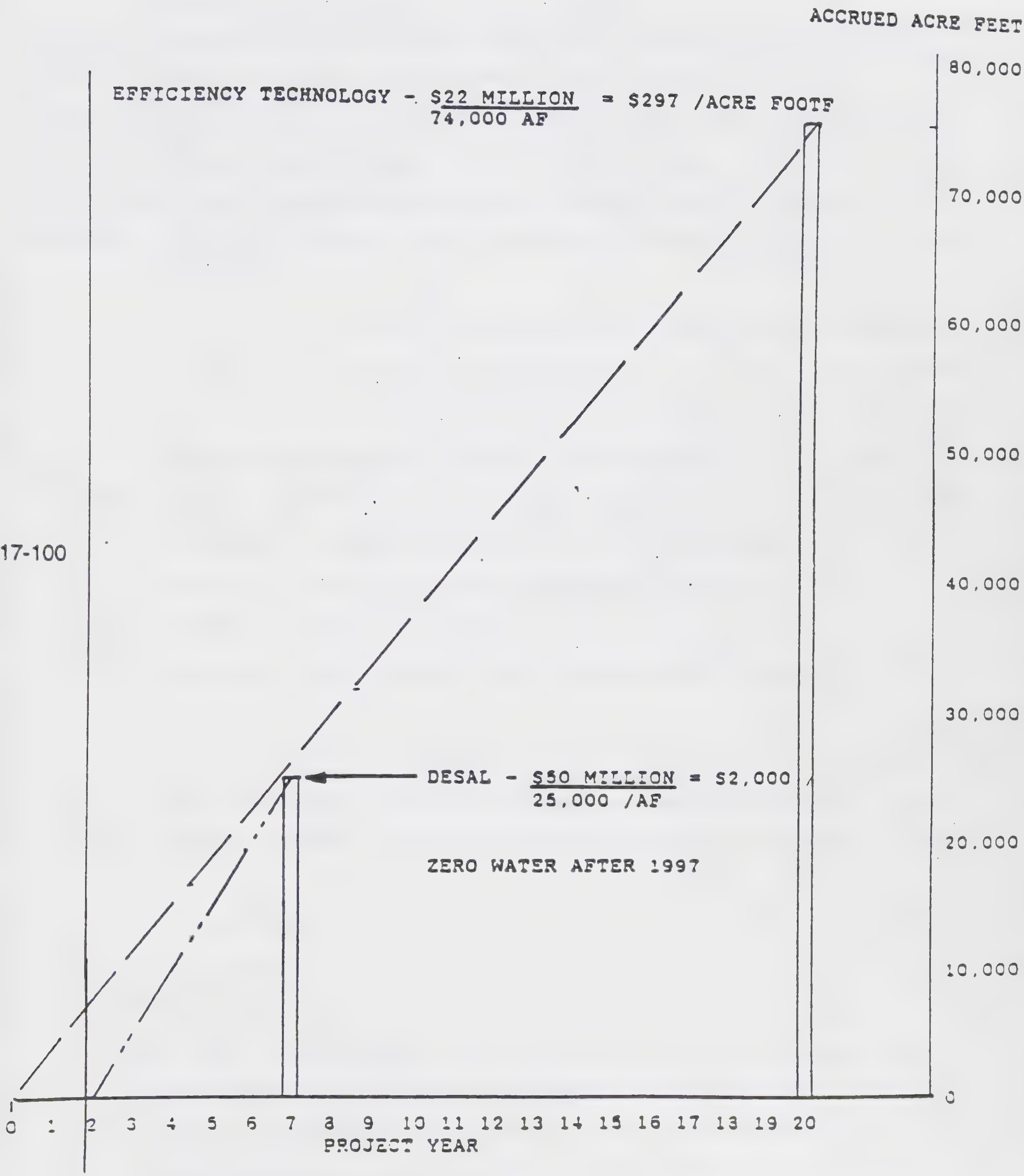
Average water consumption per load = 40

17-100 Potential water recovery =
3 loads x 52 weeks x 40 gal x 14,000 installations
= 87,360,000 gallons per year
= 11,679,144 cubic feet per year
= 268 acre feet per year

Cost per system = $200

Capital cost = 14,000 x 200 = $2,800,000 amortized over 5 years
= $560,000 per year amortized cost

divided by 268 acre feet per year
= $2,085 per acre foot first five years
$500 per acre foot thereafter



ACCRUED ACRE FEET
EFFICIENCY TECHNOLOGY - $22 MILLION / 74,000 AF = $297 /ACRE FOOTF
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
DESAL - $50 MILLION / 25,000 /AF = $2,000
ZERO WATER AFTER 1997
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
PROJECT YEAR

Response 17-1: The commentor is incorrect in stating that the City "must purchase a minimum quantity of water during the first three years" of the contract with Ionics. The City has retained the right to put the plant on standby status at any time following 30 days of plant production and would do so at any time water was not needed to offset supplies lost due to the drought. A similar restriction on sales to neighboring communities is included in the proposed agreements with Goleta, Montecito, and Summerland. The amount of water available to the City will be limited by the City's contractual obligations to the neighboring communities.

Response 17-2: Refer to Responses 14-3 and 17-59.

Response 17-3: Comments noted. Refer to Response 14-4.

Response 17-4: Abandonment procedures are discussed in Section 2.8 of the EIR. Refer to Response 13-2b for more information regarding abandonment operations. Removal of above ground facilities would result in minor impacts that would be similar to, but less than, those associated with construction. No significant effects are predicted for construction therefore none will occur associated with abandonment/facility removal either. The other two options that exist at the end of the five year "term of agreement" imply that the project would continue to operate. Refer to Response 7-6 for information about the review and approvals that would be required before the temporary project could be operated beyond five years.

Response 17-5: There are several reefs in the general vicinity (within about 0.25 mile) of the outfall diffuser, but none directly adjacent to the outfall discharge point. The prior presence of kelp beds in the general project area is discussed in Section 3.4 of the EIR. Refer to Response 12-12 for more information.

Response 17-6: As discussed in Section 2.4.5 the average brine discharge will be about 13 MGD, including brine and membrane backwash constituents. The maximum flow of reject brine would be from a 10,000 AFY plant operating at its maximum capacity of 12,026 AFY; i.e., conditions relating to the operating allowance for 69 days of plant shutdown per year. Under such conditions, the reject brine flow would be 13.1 MGD. When added to filter backwash (1.7 MGD) and a maximum El Estero WWTP effluent flow of 9 MGD, the total maximum flow in the existing El Estero WWTP outfall would be 23.8 MGD.

Refer to Tables 3.3-1 through 3.3-3 in the EIR which list the projected combined discharge characteristics for selected constituents under various desalination plant/El Estero WWTP

operating scenarios. All three tables already utilize the 9.0 MGD pre-drought discharge for El Estero WWTP and the EIR section for marine biology/water quality considered these volumes in the impact assessment. The subject tables clearly show that the currently permitted capacity of the El Estero WWTP is 11 MGD. The EIR also discusses that the outfall/diffuser was built to operate at levels above 30 MGD in conjunction with a regional treatment facility. Obviously, an increased discharge quantity would result from the addition of the brine and the Regional Water Quality Control Board (RWQCB) will consider this during the NPDES permitting process, including development of any Waste Discharge Requirements.

Response 17-7: Refer to Response 9-5 regarding estimates of filter backwash solids, filter cartridges, RO membranes, and cleaning liquids. Based on the available analytical laboratory data the metals concentrations in the backwash solids do not constitute hazardous waste and the dewatered sludge can likely be disposed of at a Class III landfill such as Tajiguas (subject to RWQCB approval). Spent cleaning liquids will be neutralized and disposed of via the sanitary sewer in accordance with the City's Industrial Waste Discharge requirements. The modular, trailer mounted design of the majority of the desalination facility as well as the use of several existing facilities (e.g., outfalls) will limit the amount of construction related debris and waste requiring offsite disposal.

Response 17-8: Comparisons of the estimated desalinated water quality with the City's existing and/or traditional supplies are presented in Tables 3.7-1 and 3.7-2 of the EIR.

Response 17-9: The statement on page 3-2 of the DEIR regarding low liquefaction potential refers to the Wastewater Reclamation Facility which is located on the southeast portion of the El Estero WWTP adjacent to the proposed pump station/chemical treatment area. The DEIR also states on page 3-2 that the site facilities are located in an area identified has having a high liquefaction potential (Hoover, 1978). The results of the site specific geologic/geotechnical investigation performed for the proposed project are summarized in Response 9-29.

Response 17-10: Refer to Appendix F of the Final EIR and Response 9-29.

Response 17-11: No empirical noise data are available for the subsea electric pump. However, marine vessel traffic in the intake area and nearby wharf and harbor entrance already presents noise in the general vicinity of the intake. The electric pump associated with the proposed intake does not involve a large motor or spinning props and thus no significant effects are expected.

Response 17-12: Chlorination of the incoming seawater and the RO process will remove and/or destroy any viruses or bacteria that may potentially enter the offshore intake.

Response 17-13: Refer to Response 9-3.

Response 17-14: Comment noted. If the proposed plant is put on standby, pickling chemicals (sodium bisulfite, and possibly propylene glycol or glycerine) would need to be disposed of prior to plant re-startup. Table 2-7 in the EIR lists the concentration and quantities of the subject chemicals which would be required. Ionics plans to dispose of pickling chemicals via the sanitary sewer in accordance with City requirements.

Response 17-15: This comment suggests that the increased volume, density, and flowrate of the combined brine/wastewater discharge constitutes a significant impact. The EIR concludes that the changes in the characteristics of the discharge do not constitute a significant adverse impact because the changes result in conditions which are more likely to approximate natural ocean conditions, in terms of salinity, temperature, and pollutant levels, than the existing operation of the El Estero outfall. The existing wastewater discharge results in markedly lower and widely varying salinity levels, elevated temperatures, and permitted increases in BOD and turbidity. The addition of the higher salinity brine will partially offset the lower salinity wastewater, reduce temperatures of the El Estero effluent to levels more closely approximating ambient conditions, and further dilute the wastewater.

This section of the EIR, 3.2.2, relates to marine water quality, as distinguished from marine biological impacts, which are discussed later in Section 3.4. Conditions in the vicinity of the outfall currently deviate substantially from normal ocean conditions due to the operation of the El Estero outfall. The discussion of Biological Resources in Section 3.4 describes how the existing conditions have resulted in the presence of an altered biological community in this area, able to tolerate the unusually low and widely varying salinities in this area. The predicted changes in salinity resulting from the addition of the brine may be tolerated by some, but probably not all, of this community. However, none of the identified species in the area are rare or endangered and no significant effects are expected.

Prior to the drought, the El Estero WWTP discharge was about 9.0 to 9.5 MGD. The discharge rate is now about 6.0 MGD. Assuming the desalination plant is constructed, the flow rate would be expected to increase again due to more available water for use within the City. The City does not believe, however, that the pre-drought discharge of 9.0 to 9.5 MGD by the El Estero WWTP would be reached again over the 5 year desalination project life. System improvements to reduce groundwater infiltration, installation of the low flow toilets throughout the City and other water conservation efforts, will likely permanently

lower discharge rates from the El Estero facility. RWQCB Permit No. 89-63 is a renewal of NPDES Permit No. CA 0048143 and allows a maximum dry weather discharge from wastewater treatment plant of 11 MGD (19 MGD wet weather discharge). This amount is based on the treatment capacity of the plant, not the hydraulic capacity of the outfall and diffuser. The outfall pipe and diffuser are built for a hydraulic flow in excess of 30 MGD. This was in anticipation of a regional wastewater treatment plant that was not built.

Prior to the City undergoing a major program over the last 10 years to substantially reduce all inflow and infiltration (I and I) into the City's sewer system, the City experienced flow of about 25 MGD demonstrating the hydraulic capacity of the outfall and diffuser. Prior to the I and I reduction work, the I and I reached about 16 MGD. This has been reduced to about 5 MGD during major storm periods.

A revision to the City's RWQCB permit will likely be needed to reflect the use of the outfall and diffuser for discharging concentrated seawater brine from the desalination facility along with the El Estero WWTP treated effluent. Refer to Response 17-18 regarding the offshore monitoring program to be developed for the project. Refer to Responses 12-12 and 17-16 for more information.

Response 17-16: The concentrated seawater brine is estimated to increase in temperature by 2 to 3°C above prevailing seawater temperatures at the intake, depending on ambient temperatures. The brine will be mixed with the El Estero WWTP effluent prior to offshore discharge. The effluent from the El Estero facility is normally warmer (by 7° to 9°C) depending on season than the receiving waters. Thus, the brine discharge should help cool the El Estero discharge so that it more closely approximates ambient seawater temperatures. Due to the increased discharge volume, baseline and operational measurements of marine receiving waters will be taken to assess the area of thermal influence of the combined discharge.

Response 17-17: Comments noted. Refer to Response 17-19.

Response 17-18: The language that "The City, shall, in conjunction with the RWQCB consider adding salinity measurements to the offshore..." is based primarily on the fact that the RWQCB is the responsible agency for permitting offshore discharges including development and stipulation of Waste Discharge Requirements, and monitoring requirements as appropriate. The City plans to work together with the RWQCB to develop an appropriate monitoring program which will protect the marine environment. It is considered likely that

the offshore monitoring program will include salinity measurements as well as temporarily increased sampling frequency. Refer to Response 17-19 for more information.

Response 17-19: In summary, the Ecometrics letter provided with this comment, requests offshore Baseline Studies (salinity, seawater density, turbidity, dissolved oxygen, temperature, nutrient concentration, heavy metal concentration, pH, and abundance and diversity of biological resources). In addition, Ecometrics requests more sampling locations around the plume, including sampling far enough away to establish differences. Filter feeders (e.g., mussels) are recommended to be used for indicators of heavy metal accumulation, and Ecometrics recommends at least monthly sampling of temperature, salinity, and density during operation. As discussed previously in Response 17-18, actual requirements of an offshore monitoring program will be developed during the NPDES permitting process. However, the EIR preparers (including the City as Lead Agency for CEQA compliance) have reviewed Ecometrics recommendations and have the following comments:

1. A monthly monitoring plan, for a few months before the project starts, is reasonable and useful. It will provide baseline data to determine changes in seawater chemistry as a result of combined wastewater and brine discharge. As a minimum, salinity, seawater density, oxygen, pH, and certain heavy metals will be measured in the vicinity of the plume discharge along the diffuser. Details of sampling methods and frequency will need to be developed later in conjunction with the RWQCB.

Abundance and diversity of benthic marine organisms is substantially more difficult to monitor as part of the baseline studies. Furthermore, changes (either decreases or increases) in species diversity and abundance are difficult, if not impossible, to correlate positively with impacts associated with the proposed project. The reason for this is that there are other factors such as seasonality in reproduction, competition and predation that might also influence these populations. Only the occurrence of extreme changes in species diversity and abundance (e.g., mass mortalities) might be correlated with project impacts and even so one has to be careful that these are not actually related to other factors (e.g., El Nino). One photographic survey of the organisms around the diffuser would provide a rough baseline for future comparison purposes.

2. An argument is made by Ecometrics about estimates of population densities of organisms around the outfall being absent from the EIR. These data exist in the Oceanographic Services, Inc. document dated 1974-1975.

3. Other Ecometric comments: "No mention is made of continuous studies of coastal currents and their vertical distribution. However, if such studies have not been done, they may be necessary to identify local circulation patterns and stationary eddies". Response: There is a detailed discussion of currents in the Section 3.3.2.1.1 of the EIR both vertical and horizontal, as well as their frequent shifts and irregularities. There have been no continuous studies of currents, and to identify local circulation patterns and stationary eddies would certainly be a lengthy process. The authors of the Ecometrics letter later state that "in order to estimate potential impacts of the brine discharge on marine organisms, one needs a good physical model of the fate of the discharge materials. Even then prediction is difficult. Thus a good monitoring program is important". Ecometrics is acknowledging that even after performing such current measurements the data will probably not be adequate to predict exactly where a water mass will be transported. On the previous page Ecometrics raises the issue that the potential effects of diluted sewage water reaching the intake has been minimized in the EIR and suggest again that current measurements be examined to identify circulation patterns and to determine the existence of stationary eddies. This issue is not significant, because as stated in the EIR, the sewage effluent will have undergone secondary treatment and it would be quite diluted by the time it travelled the distance to the intake, and the RO filters will remove contaminants such as bacteria and viruses. Because the combined discharge will be denser than seawater, it will tend to sink, and the likelihood of it being able to travel from deeper (70-80 feet) to shallower (25 feet) water over a relatively long distance is minimal. Again, oceanographic studies of currents would be time consuming and are unlikely to give a clear picture of current patterns.

4. Using marine organisms as bioindicators of heavy metals is not as simple and clear cut as the Ecometrics' reviewers state. Filter feeders indeed accumulate metals but the problem is that metals can also be absorbed (as particulates) to the surface of the organism. If the samples are not carefully washed and treated, the metal analysis will not distinguish between <u>adsorbed</u> and <u>absorbed</u>. Overestimation of heavy metals can easily occur due to this problem. The RWQCB has previously provided specific guidelines as part of the NPDES permit for the analysis of heavy metals in sea urchins near the outfall.

In summary, baseline studies have merit, but a photographic survey is deemed more appropriate than the detailed benthic survey recommended by Ecometrics. Detailed oceanographic studies of currents are not necessary or appropriate, and analysis of sea urchins for heavy metals (as per RWQCB) may be more appropriate than mussel analysis

as recommended by Ecometrics. The EIR preparers recommend that the sampling frequency should be quarterly, at least temporarily following desalination plant start up.

Response 17-20: Refer to Response 12-12.

Response 17-21: Comment noted. As part of the preliminary feasibility studies which were conducted for the City's alternative water supply project, the one-day SCUBA survey was conducted to supplement available data in the literature base. The field survey which was conducted generally verified the evidence in the literature base -- the purpose of the survey was not to gather data on all seasonal variations.

Response 17-22: The recommendation in the Initial Study to suspend a pipeline over Laguna Channel is no longer applicable since no proposed or alternative pipelines cross Laguna Channel. The need to cross Laguna Channel was related to the possible use of Stearns Wharf for the intake line. This option was deleted from further consideration when Ionics determined that the abandoned outfall could be utilized instead.

Responses 17-23: The RWQCB will stipulate what the offshore monitoring requirements will be (as part of any Waste Discharge Requirements for an NPDES permit), and the RWQCB will review the required written monitoring reports. If pre-established criteria are not met or unanticipated conditions develop, the RWQCB would have the authority to require remedial action, as appropriate. The City as Lead Agency for CEQA compliance and as a co-discharger also has a vested interest in monitoring the discharge and protecting the marine environment.

Response 17-24: Construction of the proposed project would result in temporary minor noise impacts to beach users on a small portion of the beach near the weir box (refer to Figures 1-1 and 2-1) during the off season for tourism. Construction of the proposed project will be subject to the City's standard restrictions on construction activities, including no construction on Sundays or holidays and limiting construction to between 7 a.m. to 6 p.m. only. No significant noise effects are expected related to temporary construction activities.

Responses 17-25: Refer to Response 9-3.

Response 17-26: Refer to Response 9-29. The EIR includes consideration of seismic related impacts including potential chemical releases. As stated in Section 3.6.1 of the EIR, Federal, State, and local laws and regulations stipulate standards for design of facilities, storage requirements, spill prevention procedures, emergency response and contingency plans, risk management, and employee training procedures. The proposed project has been

designed in accordance with Uniform Building Code requirements for Seismic Zone IV and will comply with Article 80 of the Uniform Fire Code. Compliance with these regulations including the use of secondary containment for all chemical storage areas and use of double walled piping. all help limit the potential for an accidental release associated with a seismic event. Operating procedures will include facility shut down procedures in the event of a seismic event as well as inspection and repair procedures.

Response 17-27: A more comprehensive risk assessment will be conducted as part of the Risk Management Plan/Article 80 and AB 3777 Risk Management Prevention Program compliance process. Refer to Response 17-29 for more information.

Response 17-28: Section 3.6.3 of the EIR identifies areas that are considered potentially susceptible to effects from an accidental chemical release. The EIR does not mention potential impacts to beach goers associated with an accidental chemical release because no hazardous materials (except fuel in vehicles and equipment during construction) are planned to be used or stored on the beach during the construction or operation phases of the project. Refer to Responses 17-29 for information regarding risk assessment for the project.

Response 17-29: A Risk Management Plan will be prepared in accordance with Article 80 of the Uniform Fire Code and a Hazardous Material Business Plan will be prepared in accordance with Assembly Bill 2185/2187 (as amended). In addition, a Risk Management Prevention Program will be performed for acutely hazardous materials in accordance with Assembly Bill 3777 (as amended). Ionics and the City are currently assessing the applicable plan and assessment requirements. As the plans are required they will be prepared and the findings will be complied with as appropriate. In most cases these plans take substantial time and effort to prepare (following formal requests being made by the administering agencies), and it is not normally possible to include them in the EIR for a project. Regardless, the administering agencies will thoroughly review the plans and stipulate requirements, as appropriate.

Response 17-30: Refer to Responses 8-2 and 17-29.

Response 17-31: Refer to Responses 2-1, 2-2, and 2-3.

Response 17-32: The predicted desalinated water quality values presented in Table 3.7-1 for various constituents show the upper end of the estimated quality range for the constituents listed by the commentor. The estimated desalinated water quality for inorganic chemicals (heavy metals) are at most 10 percent of the Maximum Containment Levels (MCL) except for selenium which is estimated to be up to 50 percent of the MCL -- for comparison purposes

the City's traditional supplies sometimes exceed the MCL for selenium. As such, the levels of these inorganics were not considered to be of concern and thus they were not specifically discussed.

Response 17-33: Comments noted. Refer to Response 7-3.

Response 17-34: As shown in Table 3.7-1 of the EIR, the TDS levels which are predicted for the desalinated water are not "high" relative to the MCL for TDS or the TDS levels in the City's traditional supplies. The MCL for TDS is 1000 ppm while the estimated TDS range for the desalinated water is 340 to 456 ppm (less than 50% of MCL). The City's average surface water and groundwater TDS ranges are 700 and 656 ppm respectively. Refer to Response 9-31 regarding second pass RO.

Response 17-35: Refer to Response 7-2, and 7-4, and 9-31 regarding chloride, sodium, and second pass RO, respectively. Please note that the AWWA does not issue "drinking water standards" -- the AWWA issues recommended levels.

Response 17-36: The EIR describes the views of the proposed desalination facility from the ground, the new freeway overpass, the Rescue Mission, and other vantage points in Section 3.8.2.2 and presents photographs of views of project areas from various vantage points as well. The EIR does not describe the view from 100 feet above the freeway as stated by the commentor. The artist's rendering of the proposed desalination facility (Figure 3.8-1) presents an oblique perspective from about 100 feet above the abutting freeway. A rendering at freeway grade level was not provided in the EIR because it would have shown the landscape screen and trailer/tank tops only. The plant site will be screened from freeway view.

Response 17-37: The visual impacts of the proposed temporary desalination project, as mitigated, were found to be insignificant. The addition of three power poles along Yanonali Street in an industrial area is not considered to constitute a significant visual impact due to the temporary nature of the project, and due to the absence of impacts on significant viewsheds.

Response 17-38: The "size of the beach area which will be fenced off during excavation activities" for safety purposes is shown on Figure 2-7 in the EIR and is approximately 40 feet by 100 feet maximum.

Response 17-39: Sections 2.3.6 and 3.9.22 of the EIR indicate that boats use the area where the proposed intake is located. As stated in Section 3.9 and as per discussions with the Coast Guard and City Waterfront Department, a lighted navigational buoy will mark the intake location. No other boat restrictions are proposed although construction activities will temporarily restrict boat traffic due to the presence of a barge, divers, etc. No significant effects are predicted.

Response 17-40: The proposed intake structure will not impact recreational or commercial fishing due to the very small area involved and the low velocity of water through the intake (less than natural currents in the area). The proximity of the intake location to the mooring area and harbor entrance already limit fishing activities in this area. The combined brine/El Estero WWTP discharge will comply with any RWQCB Waste Discharge Requirements and will be monitored for compliance. No significant effects to recreational or commercial fishing are predicted. The area around the outfall diffuser is already designated off limits by the State for commercial fishing and/or shellfish harvesting related to the El Estero WWTP discharge.

Response 17-41: As stated in the EIR, beach construction is scheduled for the off-season for tourism. Standard City construction practices will not allow beach construction on Sundays or holidays. If construction must be delayed or accelerated and beach construction must occur during the tourist season, attempts will be made to limit effects as practical. Regardless, beach area construction impacts to recreation will not be significant due to the small area involved and the short term nature of the construction activities.

Response 17-42: As stated in Section 3.10 of the EIR, a professional archaeological monitor will be present to monitor excavations greater than two feet in depth at areas of potential high cultural resource sensitivity (i.e., desalination plant site and brine discharge tie-in point). The professional archaeologist and the City Environmental Analyst will conduct a pre-construction briefing with construction personnel regarding identification of potential resources and stop work/notification procedures.

Response 17-43: Issues and environmental impacts of energy use associated with the proposed desalination project are presented in Section 3.11 of the EIR in accordance with CEQA requirements. The EIR does not state that energy use impacts will not occur. The EIR acknowledges that the desalination facility will require a substantial amount of energy to operate (approximately 8 MW) in relation to other existing water supplies in the City (refer to page S-5 in the Summary). The fact that Southern California Edison has the necessary excess permitted capacity to supply the energy demand of the project is the basis for the

finding that impacts will not be significant. Refer to Responses 10-3, 17-7, and 16-11 for more information.

Response 17-44: Refer to Responses 9-5 and 9-23.

Response 17-45: The EIR does not identify Tajiguas landfill as the disposal site for project related solid waste disposal -- Tajiguas is identified as a possible disposal site for non-hazardous wastes. Refer to Responses 9-5 and 9-23 for more information regarding project related solid waste disposal. The majority of solid wastes (e.g., membrane residue/sludge, spent filter cartridges, and RO membranes) generated by the project will be classified as non-hazardous and will not require special treatment or pose serious environmental concerns.

Response 17-46: Recycling opportunities are being explored by Ionics at the request of the City. The sludge residue that will be generated by the project is estimated to contain approximately 50 percent solids. The actual sludge residue generated by the project will be analyzed during the initial startup/shakedown period and the specific characteristics, including recycling potential, will be assessed at that time.

Response 17-47: The closure of the Salsipuedes offramp is discussed in the EIR Summary. This offramp was constructed on City property as a temporary offramp to mitigate temporary closure of the Milpas Street offramp by CalTrans. The Milpas offramp is now open again and the new Garden Street offramp/onramp will facilitate traffic flow in the project vicinity. The temporary Salsipuedes offramp will be removed irrespective of the proposed desalination project. The construction of the desalination facility may result in the temporary ramp being removed three to six months earlier than previously planned.

Response 17-48: Refer to Response 17-39.

Response 17-49: Refer to Responses 7-1 and 7-2.

Response 17-50: Refer to Responses 7-1 and 7-2.

Response 17-51: It is considered unlikely that the "off limits" area for shellfish harvesting and commercial fishing in the vicinity of the existing El Estero WWTP outfall/diffuser will need to be expanded associated with the proposed desalination project. Potential constituents of concern to the RWQCB/DOHS such as fecal coliform in the treated sewage effluent are not present in the brine discharge. The concentrated seawater brine will help dilute the secondary treated effluent and compliance with any RWQCB Waste Discharge Requirements (WDRs) for the combined discharge will be adequate to protect the marine

environment and human health. Monitoring associated with the WDRs will further protect the marine environment -- refer to Response 17-19 for more information.

Response 17-52: As discussed in Section 3.11 of the EIR, the proposed project will require substantial energy to operate and the project will increase demand on existing energy sources. According to SCE, there is more than enough excess capacity to supply this project as well as other anticipated new energy demands on the SCE system over the five year project life. Therefore, the desalination project contribution to the cumulative energy demand is not considered to be significant. Refer to Responses 10-3, 14-7, and 16-11 for more information regarding energy availability and excess capacity. Refer to Responses 10-3 and 12-1 for information regarding air quality issues.

The "cumulative" impacts of the combined El Estero WWTP secondary treated effluent together with the brine discharge, including combined water (under various flow scenarios) and comparison to current RWQCB WDRs for the El Estero discharge are included in Section 3.3.2, including Tables 3.3-1 through 3.3-7. The potential effects on marine biology associated with the combined discharge are assessed in Section 3.4. No other nearby planned offshore projects were identified for inclusion in the cumulative impact assessment of marine water quality/marine biology impacts associated with the proposed project.

Response 17-53: Refer to Response 7-6.

Response 17-54: Refer to Responses 7-6 and 13-7.

Response 17-55: Refer to Response 7-6.

Response 17-56: Refer to Response 7-6.

Response 17-57: Refer to Response 7-6 and 13-6.

Response 17-58: Comments on the Initial Study and the NOP identified apparent concern and confusion regarding when or how water from the project would be used. In response, the Project Description in the EIR (Section 2.2) defines conditions of water shortage which will determine when the emergency water supply could be used, within the five year life of the project. This description is intended to be binding on the City, as would any other element in the Project Description used for environmental analysis.

Response 17-59: Refer to Response 17-58. The EIR does not assume that the City's use will be limited to 5000 AFY, although current negotiations with neighboring water agencies suggest that no more than 5000 AFY would be available for the City's use. Any use of project water by the City will be subject to the constraints identified in Section 2.2, limiting use to replacement of supplies lost to the drought. References throughout the document to the capacity of the facility and the use of that capacity have been clarified to eliminate any confusion.

Response 17-60: The purpose of the proposed project is to temporarily replace a portion of water supplies lost due to the drought. The City will utilize up to approximately 5,000 AFY of the water to be produced by the desalination facility. The Growth Inducement discussion in Response 13-6 demonstrates that the availability of water from this drought emergency project would, at a maximum, result in the lifting of Drought Restrictions, not the Long Term Water Ordinance. The amount of development which could occur as a result is limited by the water allocation available, i.e., 50 acre feet per year, and is unrelated to the amount of water produced by the project. Refer to Responses 7-6, 13-6 and 17-59 for more information.

Response 17-61: Refer to Response 13-6. Residential growth within the City is restricted by Charter Section 1507, the General Plan and City zoning regulations, and the availability of other resources. Residential growth is controlled by the policies of the Housing Element of the General Plan and implemented by the zoning ordinance. Currently, residential growth is further restricted by the Long Term Water Ordinance and the Stage II and III Drought Restrictions. The availability of water is only one of the resource limits referred to in Section 1507, and the proposed project will not produce a new additional water supply that could be used to allow growth. Other resource considerations including air quality and traffic limit growth as well as water.

Response 17-62: Refer to Responses 7-6 and 13-6.

Response 17-63: Should other communities commit to participating in the proposed desalination project, the contractual agreements between the City and the other communities will stipulate that the water can only be used to replace supplies lost due to the drought. The discretionary decision by other communities to purchase and use the water to replace supplies lost due to the drought will necessitate CEQA compliance/environmental assessment on their part. The proposed contracts for sale of water to other communities require the purchasing communities to demonstrate, prior to the execution of the contract, compliance with CEQA for their purchase and use of the water.

Response 17-64: Refer to Response 4-1. Cost data for the proposed desalination project at 2500, 5000, 7500, and 10,000 AFY water output rates are included in the Council Agenda Report in Appendix D of the EIR.

Response 17-65: Refer to Responses 4-2, 8-1, 9-2, and 14-3. Matrices have been provided in the EIR which incorporate the characteristics of the alternatives and compare them concisely (refer to Tables 7-2 and 7-3).

Response 17-66: Refer to Response 14-3.

Response 17-67: Refer to Response 9-31.

Response 17-68: Refer to Responses 4-2, 8-1, 9-2, and 14-3 for more information.

Response 17-69: Refer to Response 17-65, Tables 7-2 and 7-3, and Appendix D of the EIR for a comparison of alternatives to the project. The tabular comparisons and accompanying textual discussions compare three desalination proposals (including the proposed Ionics RO proposal and the distillation proposal) as well as three tankering proposals. The City Alternative Water Supply Review Panel identified the Ionics RO proposal as the preferred alternative, following detailed consideration of technological and environmental issues. The assessment of the alternate sites for a desalination plant which is presented in Section 7.3.2.2 of the EIR clearly identifies the proposed project site as the environmentally superior site for the City's temporary emergency desalination plant.

Response 17-70: The distillation proposal along with other desalination and tankering alternatives was analyzed in extensive detail by the City Alternative Water Supply Review Panel. The Panel's analysis was very thorough and included over 2000 person hours of staff time and over 20 hours of public hearings by the Panel. A preliminary environmental assessment of the final three desalination and three tankering proposals was prepared (Woodward-Clyde Consultants, 1990) followed by an Early Public Consultation Scoping Hearing. The City Council then held eight more hours of public hearings which culminated in the selection of the Ionics desalination project as the preferred alternative on August 14, 1990.

Response 17-71: Refer to Responses 8-1 and 9-2.

Response 17-72: CEQA does not prohibit use of appendices to present information in an EIR. All the appendices presented in the EIR are clearly identified and referenced in the text in the main body of the EIR.

Response 17-73: The EIR alternatives analysis is extremely thorough and complies with CEQA, therefore there is no need to revise it. Refer to Responses 17-70 and 8-1 for more information regarding distillation.

Response 17-74: Refer to Response 2-2 and 8-2.

Response 17-75: Refer to Response 17-70 and Tables 7-2 and 7-3 in the Final EIR.

Response 17-76: The City is aggressively pursuing reclamation via the Wastewater Reclamation Facility at the El Estero WWTP, including ongoing expansion of the output and use of reclaimed water within the City. Additional data regarding the City's reclamation program and the constraints to expansion of the program follow.

Phase I and Phase II of the City's reclamation program will use all of the available reclaimed waste water during the summer peak months. Alternative uses of reclaimed water include:

1. Slight increase in use on additional sites which can use reclaimed water during non-peak times. The cost and impact of additional new distribution and storage facilities would have to be analyzed for individual sites.

2. Storage of reclaimed water available during the winter months for use during summer months. Impacts would include large tanks on currently undefined sites with costs for storage and additional distribution pipes significantly exceeding the cost of desalinated water based on preliminary City estimates. Phase I and Phase II of the reclaimed water project cost about 70 percent of desalinated water.

3. Recharge of groundwater basins by filtration through existing stream beds is limited by the State Department of Health Services (DOHS) to 50 percent of natural recharge. In Basin No. 1 the natural recharge is 800 AFY (i.e, would be limited to 400 AFY). Additional treatment of the reclaimed water would be needed for long-term release into creeks in order to reduce long term TDS build-up in the groundwater supply.

Response 17-77: Refer to Response 17-76.

Response 17-78: Refer to Response 17-76.

Response 17-79: The City is not aware of any instances where the State DOHS allows tertiary (or any other treatment method) treated sewage effluent to be used for drinking water, therefore this does not appear to be a feasible alternative at this time.

Response 17-80: Refer to Response 17-79.

Response 17-81: Although injection of reclaimed water may be capable of helping to inhibit seawater intrusion (if permits could be obtained from the State), this activity is not capable of meeting the project objectives and therefore is not a feasible alternative. In addition, direct injection of reclaimed water into groundwater basins is not allowed by the State DOHS except for special cases such as Orange County. Orange County has special geologic conditions and large distances between injection and drinking water wells that do not exist in Santa Barbara. Santa Barbara wells are significantly closer to the ocean and exist in a more fragmented geologic structure making a saltwater buffer infeasible to protect lower basin wells according to current State DOHS regulations.

Response 17-82: Refer to Response 17-81.

Response 17-83: The discussion of Conservation in Section 7.2.4.2 has been clarified in the Final EIR.

Response 17-84: Refer to Response 17-83. The City report cited in this comment is an analysis of the long-term potential for water conservation. The discussion of conservation in the EIR fully addresses short-term conservation opportunities and constraints.

Response 17-85: The efficiency improvements analyzed in the report by Peter Schillke are unrealistic in the degree of penetration (e.g., % of toilets retrofitted) proposed. His analysis assumes full implementation, 100 percent of fixtures in some cases, within one year. The City considers this degree of penetration unrealistic even for a long term program. Mr. Shillke's analysis fails to include the considerable costs of administration, inspection and enforcement which would be required for a mandatory program which would be required to achieve these results. A substantial rate of retrofitting can and is being achieved with the rebate incentive approach, as demonstrated by the approximately 14,000 low-flow toilets installed to date.

Response 17-86: Mandatory retrofit requirements have been considered by the Water Commission and City Council several times over the past several years. Most recently, as part of its

consideration of a number of potential Stage III Drought restrictions, the Council considered imposing mandatory retrofit requirements for hotels/motels and for residential units on resale.

The Council has consistently chosen to encourage water customers to retrofit on a voluntary basis. As an incentive to customers, the City has provided a rebate in the amount of $80 per toilet and has provided ultra low-flow shower heads free of charge. As of February, 1991, approximately 14,000 toilets have been retrofitted and over 35,000 shower heads have been distributed.

The City has also imposed an off-site retrofit requirement on new development projects that obtain building permits during the Stage III Drought Condition. This restriction requires developers to achieve a water savings of at least two times the water needed for the new development. This water savings is achieved by retrofitting either residential or nonresidential uses off-site on properties served by the City. While the results of this activity have so far been limited, a significant increase in retrofitting activity is anticipated in the near future.

Response 17-87: The City has not included any estimates of the cost of toilet retrofits in this analysis. The cost estimates provided by Mr. Shillke do not include City costs for administration and inspection for a voluntary rebate program or enforcement costs for a mandatory program.

Response 17-88: The City's long-term conservation goals are irrelevant to this drought emergency response project. As shown in EIR Table 7-1, if the drought continues and the proposed desalination project is implemented, water savings of 18 percent will still be required to meet the City's water demand. This nearly doubles the 10 percent short term conservation goal proposed in this comment.

Response 17-89: The City worked with the staff of the Rental Housing Mediation Task Force to develop information to be used by rental property owners to inform their tenants of the need to save water and to suggest ways to meet water conservation goals. Special attention was given to providing information for low income tenants to help them to reduce water usage to avoid increased costs related to higher water bills. A "Notice to Tenants" was printed in English and Spanish and distributed to owners of rental housing for distribution to tenants. The City has recommended ways for property owners and tenants to work together to reduce water use.

The estimate of 18 percent conservation in 1992-1993 included in Table 7-1 of the EIR is the City's best estimate of a reasonable short-term goal for water savings, if the drought continues. If the drought continues beyond 1992-1993 or if any of the "Good Confidence" or "Probable New Sources" fail to produce as expected, even greater levels of conservation could be required.

Response 17-90: Comments noted. The only alternative to desalination which has been identified by the City as being potentially capable of meeting the project objectives is water tankering from western Canada. Based on the substantial assessment of the tankering proposals, the proposed RO desalination project is considered to be environmentally superior. Refer to Response 13-4 and Appendix D of the EIR for more information.

The purpose of the assessment of alternatives is to mitigate or reduce significant effects. Since no significant effects are predicted for the proposed desalination project, the alternatives analysis presented in the EIR is more than adequate. The alternatives assessment determined that desalination was preferable to tankering and that the proposed RO project was preferable to the distillation proposal. The No Project Alternative is not considered to be environmentally superior to the proposed project because it would not allow the negative impacts of the drought to be avoided. Negative effects associated with the No Project Alternative assuming the drought continues include lack of potable water for human health and safety, loss of irrigation water, and lack of water for water dependent businesses. Increased conservation and reclamation are not capable of avoiding the adverse effects associated with the No Project Alternative.

Response 17-91: Refer to Responses 17-83, 17-85, and 17-90.

Response to 17-92: Refer to Responses 2-2, 9-31, and 14-3 regarding chlorination, second pass RO, and smaller plant capacity, respectively.

Response 17-93: Refer to Response 7-6.

Response 17-94: Refer to Response 4-1.

Response 17-95: As discussed in Section 7.0 of the EIR, reclamation and conservation are not alternatives to the proposed project. The City's estimated water needs assuming the drought continues already have been reduced substantially by the aggressive conservation and reclamation programs instituted by the City. The proposed desalination facility production of approximately 5000 AFY for the City, when added to the other supplies available to the

City, still falls well short of the City's historical demand, thus "downsizing" of the facility is not a realistic option. No significant effects are predicted for the proposed 10,000 AFY facility, therefore it is not necessary to consider downsizing the facility unless neighboring communities decide not to participate in the project.

Response 17-96: The EIR fully considers potential impacts to energy use, solid waste, water quality, and biological resources. Impacts were found to be insignificant. Refer to Response 9-5 for more information regarding solid waste disposal, and Response 17-19 for information regarding monitoring of marine water quality and biology effects. In conclusion, no potentially significant effects are predicted for these resource areas.

Response 17-97: Refer to Response 17-19.

Response 17-98: Comments noted. Refer to Responses 4-2, 8-1, 9-2, 14-3, 13-4, 17-70, and 17-95.

Response 17-99: Refer to Response 17-19.

Response 17-100: Refer to Response 17-85.

STATE OF CALIFORNIA—OFFICE OF THE GOVERNOR

OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

Jan 23, 1991

MITCH OSHINSKY
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SANTA BARBARA, CA 93102-1990

RECEIVED

JAN 28 1991

CITY OF SANTA BARBARA
PLANNING DIVISION

Subject: DESALINATION PROJECT
SCH # 90010859

Dear MITCH OSHINSKY:

The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code required that:

18-1 "a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation. These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact Terri Lovelady at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

David C. Nunenkamp
Deputy Director, Permit Assistance

Enclosures

cc: Resources Agency

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January 11, 1991

5-SB-101/225-
13.1/5.5
Desalination Project
DEIR SCH# 9010859

Mitch H. Oshinsky
City of Santa Barbara
630 Garden Street
Santa Barbara, CA 93102

Dear Mr. Oshinsky:

Caltrans District 5 staff has reviewed the above-referenced document. The following comments were generated as a result of the review:

18-2 An encroachment permit must be obtained before any work can be conducted within the Caltrans right-of-way. Please be advised that, prior to obtaining an encroachment permit, you are required to have design plans approved by this office and an approved environmental document. Should you have further questions regarding encroachment permits, please contact Steve Senet, Permits Engineer, at (805) 549-3152.

Please send us a copy of the Final Environmental Impact Report when it is available. Thank you for the opportunity to comment.

If you have further questions, please contact me at (805) 549-3139.

Sarah J. Chesebro
District 5
Intergovernmental Review Coordinator

SJC:sjc
cc: John Reede, SCH
Sharon Scherzinger, HQIGR
JAV, VLN, GLR, RJB, KAT, ACC

State of California

The Resources Agency

Memorandum

To : 1. Projects Coordinator
Resources Agency

Date : January 16, 1991

2. Mr. Mitch Oshinsky
Principal Planner
City of Santa Barbara
630 Garden Street
Santa Barbara, California 93102

From : Department of Fish and Game

Subject : SCH 90010859 - Draft Environmental Impact Report (DEIR) for the City of Santa Barbara's and Ionics, Incorporated's Temporary Emergency Desalination Project, Santa Barbara County

We have reviewed the DEIR for the proposed construction and operation of a temporary emergency desalination facility. The proposed project consists of the installation of 2,500 feet of 36-inch diameter seawater intake line inside an abandoned 42-inch outfall line; dual offshore, screened, intake structures; onshore pipelines for seawater intake and chemical distribution; an onshore seawater pump station; reverse osmosis desalination plant and associated pipelines for seawater intake; and the discharge of the residual concentrated seawater brine through the existing El Estero Waste Water Treatment Plant (WWTP) secondary effluent outfall. Operation of the proposed project is limited to five years. Long-term operation will require additional environmental review and permitting.

18-3 The project as proposed would result in impacts to marine resources from the placement of the seawater intake structures, entrainment of ichthyoplankton (eggs and larvae), and discharge of concentrated seawater brine through the WWTP outfall.

Construction impacts associated with installation of the seawater intake structures and sleeving the abandoned outfall line will have short-term insignificant impacts. Operation of the seawater intake and discharge of concentrated seawater brine could result in impacts to marine resources.

The intake structure will be screened and intake velocities will be less than 0.1 foot per second. Screening of the intake structures will preclude entrainment of adult and juvenile marine fish and the low intake velocity could reduce entrainment of some forms of ichthyoplankton.

18-4 The discharge of up to 13.5 million gallons per day (MGD) of concentrated seawater brine, including backwash, through the existing El Estero WWTP would alter existing discharge characteristics, significantly increase the current discharge volume of about 6.5 MGD, and exceed the existing discharge permit limit of 11 MGD. The document discusses potential changes to the

existing discharge plume and effects on existing resources and water quality. The projected potential changes to existing discharge effects appear to be reasonable; however, we believe a discharge monitoring plan to ascertain the actual effects of the modified discharge is necessary.

18-4

Because the existing WWTP discharge will be modified by the addition of up to 13.5 MGD of concentrated seawater and the existing discharge limits will be exceeded we believe a new or modified discharge permit will be required. The Department would review and provide comments and recommendations, if necessary, regarding the issuance of a new or modified discharge permit including a monitoring plan.

In addition, because a section of the onshore pipelines parallels Laguna Channel, notification pursuant to Fish and Game Code sections 1601-1603 will be necessary if intrusion into the channel occurs.

18-5

Diversion, obstruction of the natural flow, or changes in the bed, channel, or bank of any river, stream, or lake will require notifica the Fish and Game Code. Notification should be made after the project is approved by the lead agency.

Should you have any questions, please contact Mr. Richard Nitsos, Environmental Services Division, Department of Fish and Game, 330 Golden Shore, Suite 50, Long Beach, CA 90802, telephone (213) 590-5174.

Pete Bontadelli
Director

Please Note Change In Review Dates

Page 1 of 2

Mail to: State Clearinghouse, 1400 Tenth Street, Room 121, Sacramento, CA 95814-916/445-0613

See NOTE below
SCH # [illegible]

NOTICE OF COMPLETION AND ENVIRONMENTAL DOCUMENT TRANSMITTAL FORM

1. Project Title: Temporary Emergency Desalination Plant
2. Lead Agency: City of Santa Barbara
3. Contact Person: Mr. Mitch H. Oshinsky
3a. Street Address: 630 Garden Street
3b. City: Santa Barbara
3c. County: Santa Barbara
3d. Zip: 93102
3e. Phone: (805) 564-5470

PROJECT LOCATION
4. County: Santa Barbara
4a. City/Community: Santa Barbara
4b. Assessor's Parcel No.: 17-54-03
4c. Section: n/a Twp. n/a Range n/a
5a. Cross Streets: Salsipuedes Street
5b. For Rural, Nearest Community: ______
6. Within 2 miles: a. State Highway No. U.S. 101 Airports ______ Railways Southern Pacific Waterways Laguna Channel

7. DOCUMENT TYPE

CEQA

01.__NOP
02.__Early Cons.
03.__Neg Dec
04. x Draft EIR
05.__Supplement/Subsequent EIR
(Prior SCH N.: ______)
06.__NOE
07. x NOC
08.__NOD

NEPA

09.__NOI
10.__FONSI
11.__Draft EIS
12.__EA

OTHER

13.__Joint Document
14.__Final Document
15.__Other______

8. LOCAL ACTION TYPE

01.__General Plan Update
02.__New Element
03.__General Plan Amendment
04.__Master Plan
05.__Annexation
06.__Specific Plan
07.__Community Plan
08.__Redevelopment
09.__Rezone
10.__Land Division (Subdivision, Parcel) Parcel Map, Tract Map, etc.)
11.__Use Permit
12.__Waste Management Plan
13.__Cancel Ag Preserve
14. x Other Coastal Development Permit

9. DEVELOPMENT TYPE

01.__Residential: Units____ Acres______
02.__Office: Sq. Ft.______ Acres______ Employees______
03.__Shopping/Commercial: Sq.Ft.______ Acres______ Employees______
04.__Industrial: Sq. Ft.______ Acres______ Employees______
05. x Water Facilities: MGD 8.9 (10,000 AFY)
06.__Transportation: Type______
07.__Mining: Mineral______
08. x Power: Type Electricity Watts 66kV
09.__Waste Treatment: Type______
10.__OCS Related
11.__Other:______

RECEIVED
DEC 21 1990
STATE
CLEARINGHOUSE

10. TOTAL ACRES: 2

11. TOTAL JOBS CREATED: 14

12. PROJECT ISSUES DISCUSSED IN DOCUMENT

01. x Aesthetic/Visual
02.__Agricultural Land
03. x Air Quality
04. x Archeological/Historical
05. x Coastal Zone
06. x Economic
07.__Fire Hazard
08. x Flooding/Drainage
09. x Geologic/Seismic
10.__Jobs/Housing Balance
11.__Minerals
12. x Noise
13.__Public Services
14.__Schools
15.__Septic Systems
16. x Sewer Capacity
17.__Social
18. x Soil Erosion
19. x Solid Waste
20. x Toxic/Hazardous
21. x Traffic/Circulation
22. x Vegetation
23. x Water Quality
24. x Water Supply
25. x Wetland/Riparian
26. x Wildlife
27. x Growth Inducing
28. x Incompatible Landuse
29. x Cumulative Effects
30.__Other______

13. FUNDING (approx.) Federal $ 0 State $ 0 Total $ 0

14. PRESENT LAND USE AND ZONING: Vacant OM-1 (Ocean-Oriented Manufacturing) and S-D-3 (Special District Coastal)

15. PROJECT DESCRIPTION: The City of Santa Barbara and Ionics, Incorporated, propose to construct a desalination facility using seawater and desalinate that water using reverse osmosis on the City's vacant land at 525 E. Yanonali Street (adjacent to the Rescue Mission).

* See attached for review dates + distribution

Seawater will be drawn from a submerged intake structure attached to the City's abandoned outfall pipeline. The abandoned outfall will be sleeved with a new polyethylene pipe. The seawater will then be piped through the abandoned outfall to the El Estero Wastewater Treatment Plant. A new pipeline will carry the seawater to the desalination plant site.

Upon arrival at the desalination plant site, the seawater will be filtered and chemically treated. The water will then be pumped at high pressure through reverse osmosis membranes. Energy will be recovered from the brine water through a turbine. The brine solution will be piped to the sewer outfall, diluted with treated wastewater from the Wastewater Treatment Plant and discharged into the ocean.

The product water will be treated to make the water nonaggressive (noncorrosive) to the mineral deposits on existing City water pipes. The finished water will be pumped into the Yanonali Street water main at a pressure that will allow water not used in that area of the City to be stored in City Reservoir 1. At the higher volume options, water will be pumped from Reservoir 1 to Sheffield Reservoir for gravity distribution to other parts of the City or other South Coast Water purveyors.

The purpose of this project is to provide a temporary emergency alternative water supply on line by early 1992 and available to replace a portion of normal City water supplies. Normal City supplies have been lost due to an extreme five year drought which has produced a projected water deficit of 33 percent for water year 1990-91. This project will produce between 2,500 and 10,000 acre feet per year (AFY) of water for up to five years, a portion of which may be made available for sale to other neighboring water purveyors.

14. SIGNATURES OF LEAD AGENCY REPRESENTATIVES: Mitch H. Oslund Date December 20, 1990

NOTE: Clearinghouse will assign identification number for all new projects. If a SCH number already exists for a project (e.g., form a Notice of Preparation or previous draft document) please fill it in.

FORM REVISED 4/86 - REPLACES CA189 MARK DISTRIBUTION ON REVERSE

DEC 21

CLEARINGHOUSE CONTACT: 916/445-0613
TERRI LOVELADY TOLLETTE

STATE REVIEW BEGAN: 12-21-90

DEPT REV TO AGENCY: 1-14

AGENCY REV TO SCH : 1-18

SCH COMPLIANCE : 1-21

PLEASE RETURN NOC WITH ALL COMMENTS

AQMD/APCD: 30 (Resources: 12/22)

* Shortened review *

CMT SNT

● Resources Agency
[redacted]
S● Coastal Comm
[redacted]
S● Conservation
X S● Fish & Game
[redacted]
S● Parks & Rec/OHP (lead)
[redacted]
S● DWR
[redacted]
X S● Caltrans # 5
[redacted]
S● Health

CMT SNT

[redacted]
S● ARB
[redacted]
S● SWRCB:--Wtr Qual
S● SWRCB:--Wtr Righ
S● Reg. WQCB # 3
[redacted]
S● NAHC
[redacted]
S● State Lands Comm
[redacted]

("S" = sent by lead / "*" = sent by SCH)

Response 18-1: Comments noted.

Response 18-2: Refer to Response 5-1.

Response 18-3: Comments noted.

Response 18-4: Comments noted. A discharge monitoring plan will be implemented as part of any RWQCB NPDES permit requirements. Refer to Responses 17-18 and 17-19 for more information regarding the offshore monitoring program.

Response 18-5: Comment noted. No disturbance or activities affecting Laguna Channel are proposed.

City of Santa Barbara
California

M E M O R A N D U M

DATE: January 7, 1991

TO: Mitch H. Oshinsky, Principal Planner

FROM: Temporary Emergency Desalination DEIR Review Subcommittee
Elinor Langer, Planning Commission
Eilene S. Cross, Environmental Review Committee
Tom Gerig, Environmental Review Committee

SUBJECT: Comments on DEIR

1. A number of minor typographical and/or grammatical corrections have been noted and are contained in a separate copy of the DEIR, which is incorporated into these comments by reference.

2. The Final EIR should contain an interior title page, with the same information as the cover. The report preparers need to be listed.

3. Page S-9, Noise, Additional Measures, end of para: "if not" changed to "if so" and "should" changed to "shall."

4. Page S-11, Recreation, Additional Measures, end of para:
19-1 "should" changed to "shall."

5. Page S-12, Cultural Resources, Additional Measures, end of para: "and a professional archeologist should" changed to "and a professional archeologist and the Environmental Analyst shall."

6. P. 1-1, combine paragraphs one and two, strike sentence: "An acre foot of water equals 325,851 gallons." This definition and other terms throughout the document which may not be familiar to the layperson should be defined in a glossary section to be added to the Final EIR.

7. P. 2-1, 1st para, 2nd sentence: "The drought, now . . ." changed to "The drought, which began in about 1986, is now . . ."

8. P. 2-2, 1st para, 3rd sentence: "would" changed to "could." 2nd para, revise to read: "At the maximum proposed capacity of 10,000 AFY, a portion of the desalination plant output may be available for sale to other neighboring water purveyors because the drought is affecting water supplies available to all South Coast water purveyors." 3rd para, 2nd sentence from the end: "The project . . ." changed to "The proposed project . . ."

9. P. 2-5, combine and revise last two sentences to read: "This parcel is devoid of vegetation and vacant except for solid waste disposal containers kept onsite for disposal . . ." Where will these containers be relocated to?

10. P. 2-8 and 2-9, Table 2-2, footnote "e" does not appear in the table, footnote "f" is not defined. City waiver of discretionary review should be discussed.

11. P. 2-11, Figure 2-2, beginning with this figure, much of the type on the figures is small and hard to read, it should be enlarged with an easier to read type.

12. P. 2-16, last para, 3rd sentence, define "unsuitable seawater conditions."

19-1

13. P. 2-23, Section 2.4.5, discuss the need for a new or revised NPDES permit.

14. P. 2-35, Table 2-6, amend column title to read: "Estimated P.M. Peak Daily Truck Trips by Month."

15. P. 2-37, 2nd para, add statement that ". . . proposed chlorination will kill ___ % of _______. . ." Will chlorination be done in a dark environment to deter formation of THM's?

16. P. 2-39, 2nd para, define which antiscalent chemicals will be used.

17. P. 2-40 and 2-41, Table 2-7, define antiscalent and polyelectrolyte, specify "Maximum Amount Stored" for Sodium Hydroxide and Chlorine as "Membrane Cleaners" and "Pickling Agents," capitalize the second name of all chemicals, revise "Ferricchloride" to read as two words.

18. P. 2-44, Table 2-8, round off large numbers listed under "Estimated Concentration or Value."

19. P. 2-46, 3rd bullet, revise to read: ". . .with the existing water distribution system (as required by City)."

20. P. 3-6, 3rd full para, 1st sentence, change "Seismic Element" to read "Seismic Safety/Safety Element." 2nd sentence, "en echelon" should be italicized.

21. P. 3-10, last para, 1st sentence, strike the word "project" and define what is meant by a "significant earthquake" preferably in terms of the Richter Scale.

22. P. 3-11, discuss the potential impacts of seismic activity on stored chemicals.

23. P. 3-15, Section 3.3-1, define "reasonable" is it 100 year? 2nd full para, last sentence, "approved" by whom?

24. P. 3-21, Section 3.3.2.1.2, 1st para, 2nd sentence, revise to read: "Of these, 74 identifiable elements contribute to the salinity of seawater. Cations (species with positive atomic charges) such as sodium, potassium, magnesium and calcium; and anions (species with negative charges). . ."

19-1

25. P. 3-25 to 3-30, Table 3.3-1, revise the "Projected Combined Effluent" for pH from "6.5-8.0" to "6.5-7.8."

26. P. 3-35, baseline plume trajectory, density profile and other samples should be established prior to the start of operation of the desalination plant.

27. P. 3-36, Section 3.3-5, strike "insignificance" and replace with "the effects."

28. P. 3-47, Section 3.4-1, define general meaning of "problem." Strike "as necessary."

29. P. 3-55, 3rd para, 2nd sentence, insert "is" between "east" and "nearest."

30. P. 3-57, Table 3.5-3, add frequency spectrum.

31. P. 3-65, 3rd para, last sentence, strike "ferric chloride, and carbon dioxide" as they are not significant. 4th para, define antiscalant and polyelectrolyte. 5th para, discuss how hazards will increase at the WWTP due to the increased amounts of hazardous materials stored.

32. P. 3-69, Table 3.6-1, add typical and maximum quantities for each chemical, or add footnote to refer to Table 2-7 for that information.

33. P. 3-73, 1st sentence, revise to read: "The chemicals of potential concern for the general public are chlorine gas and . . ." Section 3.7.2.2, discuss the benefits of producing water to allow people to meet basic health and safety needs.

34. P. 3-75 and 3-76, Table 3.7-1, define "Units" for color, odor-threshold and pH.

35. P. 3-78, Table 3.7-3, add "Typical Soft Water" as a Water Supply in the table. In the "Note:" 2nd sentence, add "allowable" between "the" and "maximum."

36. P. 3-82, state that landscape will be irrigated with reclaimed water wherever feasible, as determined by the Community Development Director. Require mature and/or fast growing trees to be planted on the plant site for screening purposes.

37. P. 3-88, 3rd full para, last sentence, strike "are generally acceptable" and replace with "exist." On this page, discuss the intensity of night lighting and shielding reflection onto other sites.

19-1

38. P. 3-92, 2nd full para, last sentence, strike "not affect the winter season timing of beach construction." Replace with "still allow construction to occur in the off-season."

39. P. 3-98 and 3-99, sections 3.10-1 and 3.10-4, last sentences, add that the Environmental Analyst will also be consulted.

40. P. 3-100, last para, provide reference and context of how 8 MW relates to overall SCE use.

41. P. 3-101, 1st para bullets, state the relationship of the pollutant tonnages as a percent of total SCE generation.

42. P. 3-102, last para, strike "since completion of the proposed project will help meet the City's goal of staying within its resources, specifically water,"

43. P. 3-104, 4th full para, last sentence, insert "locally" between "air quality" and "and."

44. P. 3-105, 3rd full para, 2nd to last sentence, insert "with recommended mitigations" between "The project" and "will."

45. P. 3-106, 4th para, 3rd sentence, expand upon why the poles are required for safety purposes.

46. P. 3-108, add a section 3.12.8 on "New Long Term Water Plan."

47. P. 4-1, last para, 1st sentence, change to read "Current projects . . . improvement project, including the Garden Street undercrossing, which is scheduled to be open to traffic in December 1991."

48. P. 4-6, 1st sentence, insert "given available excess capacity" between "same" and "as."

19-1

49. P. 7-7, 2nd full para, 4th sentence, strike "Given the relative natural appearance of the property,"

50. P. 7-14, 3rd para, add discussion that the impacts of the IDE/ATI intake/caisson could be mitigated through the use of the abandoned outfall as the intake, if acceptable to IDE/ATI.

51. P. 7-15, last para, 1st sentence, strike "possibly singularly."

52. P. 7-18, Table 7-1, change "Old Wells" to "Existing Wells."

53. P. 7-21, 1st para, last sentence, insert "the State" before "Department of Health Services."

54. Appendix C, chart, insert "Trips" after "Desal Truck Traffic."

MHO\DEREVSUB.MEM

Response 19-1: The 54 comments presented in this memorandum are incorporated in the Final EIR, as appropriate.

City of Santa Barbara
California

M E M O R A N D U M

DATE: January 23, 1991

TO: Robert Ray, Woodward-Clyde

FROM: Mitch H. Oshinsky, Principal Planner MHO

SUBJECT: City Staff Comments on Desalination DEIR

City Planning Division Staff have reviewed the DEIR and have the following comments:

20-1

- Generally the document is well written, comprehensive and complies with the requirements of CEQA.
- P. S-1, bullets, Sections 9 and 10 are transposed.
- P. S-5, 1st full para, 3rd sentence, insert "and light" after "ocean oriented" and "special district-coastal" after "manufacturing." Last full sentence on the page, revise to read ". . . new Garden Street offramp (under construction)."
- P. 2-10, 2nd para, last sentence, strike "completed in October 1991," replace with, "open to traffic by December 1991. . ."
- P. 3-10, section 3.2-1, list examples of mitigation measures, section 3.2-2, describe how mitigation will be done.
- P. 3-15, section 3.3-3, list mitigation measures.

MHO\DESSTAFC.MEM

Response 20-1: The six comments presented in this memorandum are incorporated in the Final EIR, as appropriate.

GEOTECHNICAL STUDY

The Geotechnical Study is available under separate cover.